THE IRON AGE

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Curing an Isolated Village of Loneliness

The Windsor Club, Established by the Windsor Machine Company, for Its Employees and the Townspeople—Creating a Pleasant Life

BY JOHN NELSON

The Windsor Machine Company, Windsor, Vt., has established a club for its employees which is unique in several respects among institutions of its kind. The chief purpose was to create a condition in a small town which would replace for skilled employees and their families the sort of existence they leave behind when they move from a city or a large town to a country village. The Windsor Club is a social center, admirably equipped for its purpose, and its influence, already demonstrated in the few months of experience, is of vital importance to the future of the Windsor Machine Company and the town as a whole.

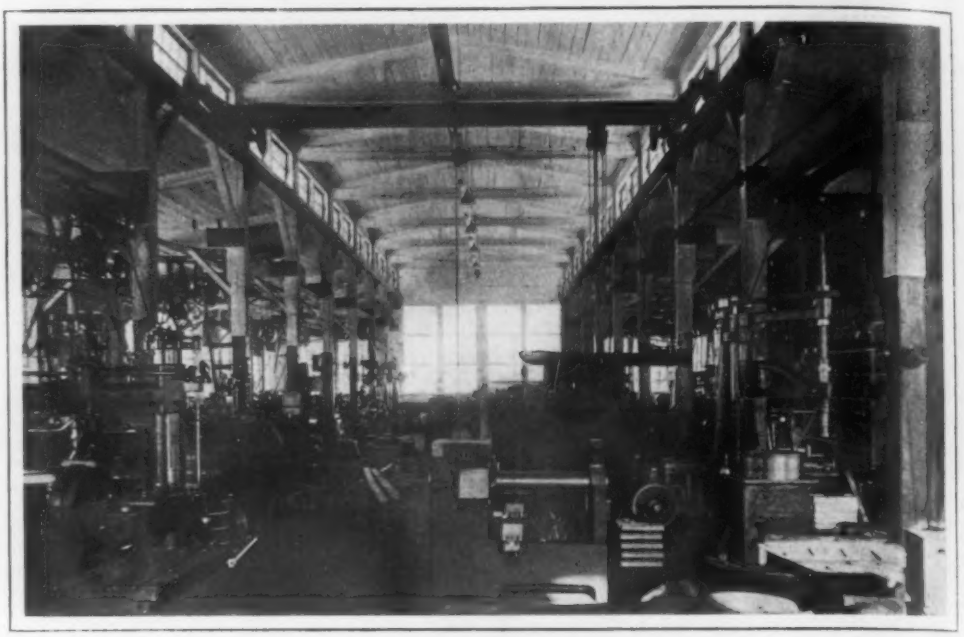
The Old Machine Shop before Conversion into a Club House

The club is the outcome of several years of planning. Three years ago, when the new plant was built, the management realized that in order to maintain a constantly increasing and efficient working force life in the town must be made as attractive as possible to employees and their families. Windsor is a place of great natural beauty. Situated on the banks of the Connecticut River, nestling between it and rugged hills, with Mt. Ascutney towering a few miles away to give the final charm to the landscape, the attraction is great from an aesthetic viewpoint. But, to the man or woman who was accustomed to the activities and amusements of larger centers, existence sometimes proved monotonous to a degree which induced serious discontent and ultimate removal to a place of greater population. The village has no theatre, excepting the usual motion picture show. Until the club came into existence amusements were merely those of any rural community. The nearest city is a long way off—much too far to permit of frequent visiting. Unless it be neutralized, the inevitable result of isolation on persons accustomed to some measure of excitement

The Windsor Club, established by the Windsor Machine Company for its Employees and Their Fellow Townsmen

is easily comprehended.

In dull times, when men are hunting for work, the small towns can get more help than they require, but when business is good, the skilled mechanics needed usually give preference to the more bustling communities. It has ever been found that married men who have accepted positions in the works and taken up their abode in the village in advance of their families have hesitated to introduce their wives into an environment which threatened an unaccustomed monotony. As for the young men of the cities, from whom the skilled mechanics, and the draftsmen, and the more highly trained of an office force are largely recruited, and also the young women, including the stenographers, the prospect of life in Windsor was not always alluring.



The Main Hall as it Used to Be

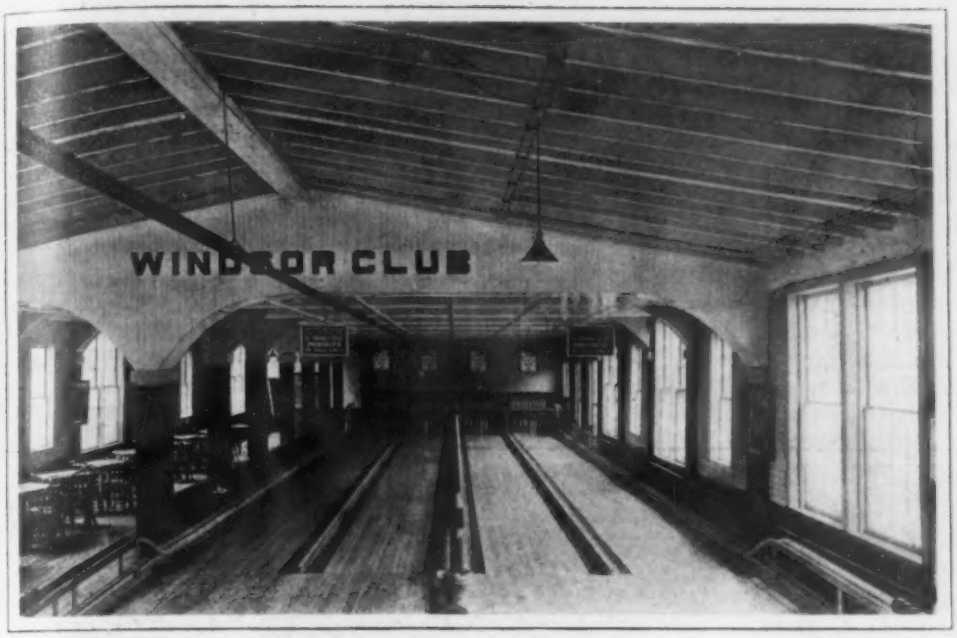
The Gridley automatic machines require in their manufacture the highest form of mechanical labor. The Vermont villages and farms can be depended on for the contribution of a certain number of boys, who are trained to be among the best mechanics in the world. But many of them strike out for the cities, and not enough are left to go around among the several thriving machine shops located in the small towns of the state.

The business of the Windsor Machine Company has grown very rapidly. The great works—as fine an example of a machine tool building establishment as there is in the world—were presumed to care for any ordinary increase. The building is now occupied to about the limit of its space, and the day of large extension is not far distant. The need is accentuated by the development of an important machine of an entirely new type, the Gridley vertical automatic turret drilling machine, which has already gone on the market, and also by the fact that the development of the Gridley automatics continues to proceed in an important way. Five years ago about 100 men were required to operate the business. The capacity today demands 550 men. Naturally the Windsor Machine Company is compelled to go to the cities for its people.

It was decided to create a social life which would be attractive to every employee worth the keeping. The effort was directed especially with the purpose of satisfying the high-class man. The planning took several forms, until the managing officers finally bethought themselves of the old plant, which had been abandoned for several years, and seemed destined to pass into complete decay. The solution of the problem was found. The buildings were converted into a club house. George O. Gridley, the general manager; Frank L. Cone, the superintendent, and the late Maxwell Evarts, gave their enthusiastic interest to the work.

The Main Hall, Formerly the Machine Shop

The building lent itself admirably to the new purpose. The location is excellent, on the main street of

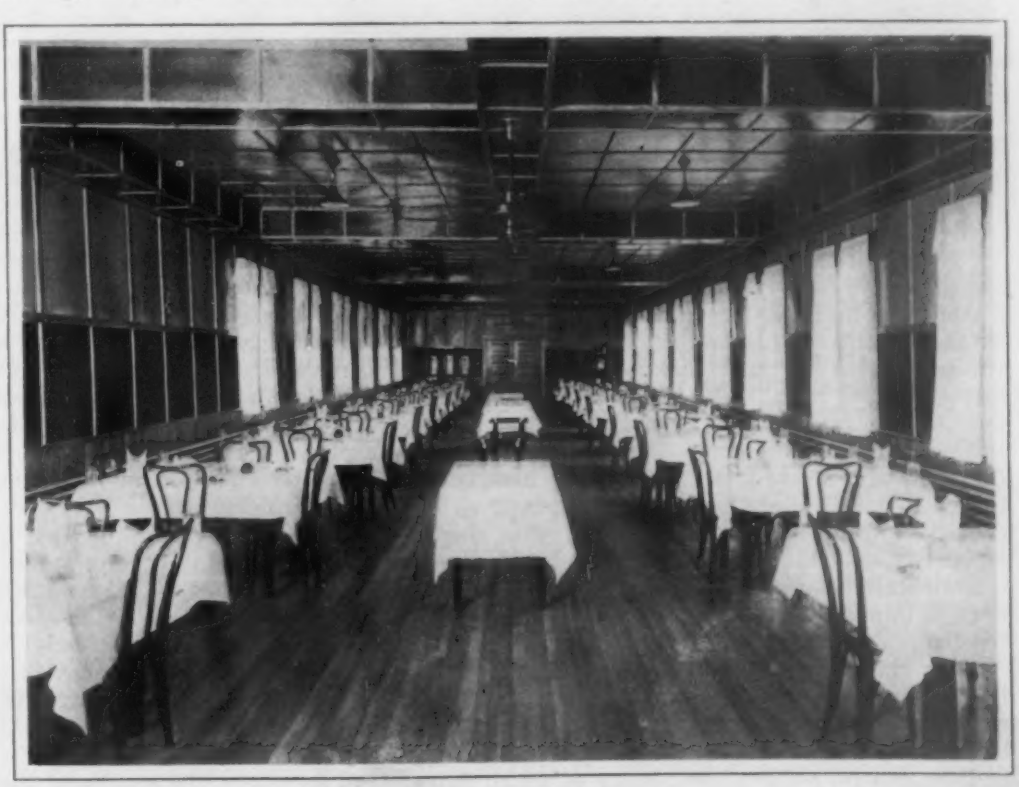


The Sporting Center of the Windsor Club

the village and yet only a few minutes' walk from the shops. There seems to be ample room; about 30,000 sq. ft. of floor space is occupied. The power plant that formerly had operated the company's machinery, and heated and lighted the works, was in excellent condition. The expense of building was confined to the erection of a piazza encircling the front and a narrow addition which widens the midway section of the structure, and to certain interior structural changes and the general renovation. On top of this was the cost of equipment and furnishings. The total outlay in cash was not great considering the results which already have been obtained and which promise to become very much greater. The real estate existed on the books as a continuous expense, for no returns were received, nor did the likelihood exist of any improvement in this respect. Already the institution has become practically self-supporting, including in the investment the mill property. The club itself is paying every expense. The restaurant, which is operated as a separate department, is still running a little behind.

The financial side of the undertaking presents an interesting study. The company naturally would like to have the club self-sustaining, but the management realizes very clearly hat the indirect financial benefit will be large—really large. The club is intended for and is used by self-respecting men, and, in the restaurant, by women of the high class found so frequently in the offices of New England manufacturers. These people are of the sort who want to pay their way. Try to give them something for nothing and they resent it. A few of the skilled employees might seize the chance with greediness, but in a great majority of cases persons such as they would eventually prove themselves useless or untrustworthy as workmen.

Every employee of the Windsor Machine Company is eligible for membership in the club. So, also, is every respectable male resident of the town. He signs the constitution and pays the annual dues of $5. The employee can have no feeling that the Windsor Machine Company is treating him to some sort of paternalism. He has the same rights in the club as Mr. Gridley or Mr. Cone, or any prominent business man of the village. The constitution and by-laws are worded simply, with few rules beyond the plain statement that a member may be expelled by vote of the club for any action that might be translated into the military phrase "conduct unbecoming a gentleman." In the six months of the club's existence, during which time 500 men have been enrolled as members, no cause of complaint has arisen, not even in one instance. This statement may seem unnecessary, but the manufacturer who may consider the adoption of the club idea may get from the frank expression some notion of the influence of such an institution. It



The Club Dining Room

leads toward decent living in a very broad sense of the word.

The conveniences of the club include practically everything that would call a man out of a boarding house in the evening. Tobacco in all forms is sold in the office and in the main hall. The member has his billiards or pool or bowling at a price much less than that commonly charged in public places. The bath, unless he has a room, costs him 10 cents, including towels and soap. There is a public telephone station. He may have his game of cards—for fun. The men who live at the club are restricted in no way as to their hours. The office is open at night until 12 o'clock, and if a member wishes to be out later he is furnished with a pass key. The power plant operates all night so that light is always to be had. To those who live elsewhere, the married men or bachelors who cannot be given rooms, because none are available, the visit to the club affords the same broad privileges.

The Club Kitchen, Modern In Every Detail

The club charges $4.50 per week for table board and $2 a week for a room. This is a little more than a workman needs to pay in Windsor, but it is no greater than the high-class employee of the shop is willing to give for much inferior fare and a much less attractive room. The Windsor Machine Company, as has been stated, is not attempting to cater to the poorer class of help. The first rate man is the type who is hard to keep and the club is intended primarily for him. The food served in the club restaurant is exceedingly good, with plenty of variety, and the service is excellent. The well-trained waitresses are neatly uniformed. The table linen is immaculate and the china and silver are attractive. A spotless neatness prevails everywhere.

The club house may be considered as consisting of three sections—the front, which is of comparatively recent construction; the rear, which was built in 1908, and which was the main machine shop, and the central section, the history of which dates back many years. The dining room, which occupies most of this part of the building, was formerly the home of one of the oldest firearms concerns in America, which years ago employed many men.

One of the most impressive features of the club house is its cheerfulness. The rooms are literally flooded with light. The capacity of the power plant is so great that electricity and heat are used with prodigal lavishness. The color scheme adds much to the general effect. Everything in the decorations is either white or of warm color tint. For example, the walls of the dining room, above the light-toned hardwood wainscoting, are paneled, a pleasant red below and a yellow tint above, while the curtains are of a dark bluish green, all blending into a bright and tasteful harmony of color.

The office, at the front of the building, is finished in Southern pine. From the main entrance the visitor looks through into a living room, the windowed side of which is filled with potted plants, many of them in bloom. The long dining room opens from the office and seats 130 persons. Beyond is the kitchen, modern in every detail, which tends toward hygiene and efficiency. A refrigerating plant keeps the storerooms at required temperatures and manufactures ice. The laundry contains the very latest of machinery and other appliances, and here is done the washing for the shops as well as for the club. No hotel of treble the size could be better equipped in its kitchen, laundry and refrigerating plant.

Extending along the side of the dining room from the office is a lounging and writing room, and beyond, reached by a long passageway is the hall-like room, in which are the bowling alleys, four of them, of the highest grade in construction and equipment. This room may be termed the sporting center of the club. A bowling tournament, in which numbered teams are the contestants, progresses through the winter months. A blackboard gives full details of the results of major league baseball games each evening of the season. Close by are the

shower baths which are used by a great many of the men. The Windsor Club supported an excellent baseball team last season.

The great room formerly occupied by the machine shop is the main hall. It is 50 x 100 ft., very high studded, and with a shallow monitor roof. The walls and columns which mark off the two side bays are painted, wainscot high, a rich red and a light blue for several feet above, while the entire upper part of the hall is white. The lamps on the columns have red globes, which combine with the brilliant glow from the powerful lights above and on the walls to enhance the gay color effect at night. In the corners of this room are the pool and billiard tables—there are seven of them in the building. At one end of the hall are two large tables, filled with magazines and technical journals and the daily papers, to which the club is a generous subscriber, and which are received promptly. There are a great many easy chairs; some 100 of them are oak rockers upholstered in leather, and in addition there are many chairs suitable for use at dances. The waxed hardwood floor provides a most satisfactory surface for dancing.

Upstairs are the bedrooms, regularly tenanted by about 30 employees of the Windsor Machine Company. They are not very large, yet they have space enough so that two men can live together without crowding. In addition to two public bathrooms on this floor, some of the rooms are arranged two en suite with private bath between, the cost of this additional luxury being a moderate advance upon the regular rates. Every room has its set bowl with running hot and cold water and steam heat. Two high-power ceiling lamps afford artificial illumination. All are outside rooms, each with two windows overlooking the village streets and the mountains beyond. The transom over the door combines with a fully ventilated corridor to insure the circulation of pure air. The furniture is plain, but very good. The contrast from conditions in the average boarding house is too great to require suggestion.

In converting the building to its new purpose the Windsor Machine Company was not led into any extravagance. Money was spent only where it seemed to promise results. Some degree of luxury was considered necessary for certain purposes. For example, the easy-chairs, which have been referred to, are by no means inexpensive. In the beginning only two dozen of them were purchased, but they were in such demand at the dances and were enjoyed so much, especially by the older people of the village, that it was thought worth while to supplement them on a large scale. The various problems of arrangement and construction were studied out with the same painstaking care that is given to the details of management of the company's shops. For illustration, the first thought was that it would be inexpedient to pipe the bedrooms for water, because of the cost. A bowl and pitcher were considered amply good enough. But a study of the question caused a change in plans. The bowl and pitcher would be cheaper as an original investment, but against this was placed the cost of labor of carrying water, the element of breakage, and the depreciation of property due to water leaking down on ceilings and walls. As a straight issue of cost it was calculated that piping and set bowls would be cheaper in the end. And naturally the greater comfort and contentment which would ensue were no unimportant factors in themselves.

Windsor is an old town, and in common with all New England villages of its type, is naturally conservative socially. The club has already done a great deal in breaking down old prejudices. It brings together the men of the town in the club life. Perhaps 80 per cent. of the members are Windsor Machine Company men. The remainder are the substantial citizens who govern the professional and mercantile interests of the community. They meet on equal footing and not infrequently. Everybody knows everyone else.

The weekly dance held Wednesday evenings brings the women to the club. The main hall is always crowded. Everything is wholly informal. The Windsor Machine Company boasts the best orchestra in this part of Vermont, so the music is good. Some of the men play billiards, others bowl, and many enjoy the dancing. Smoking is permitted. Everybody in town is invited to the dances, and no charge is made for admittance, though those who dance pay a small fee for the privilege. Young men from the Windsor Machine Company have the opportunity to meet the nice girls of Windsor, just as they have met the men on other evenings. The stranger finds his introduction into the social life of the village easy and pleasant.

As a matter of fact, the club gives as great an opportunity for amusement as usually falls to the lot of the type of men included in its membership, no matter where they live. Something is going on most of the time to interest a wholesome-minded man. Monday, Thursday and Friday evenings are given up to bowling matches, which are largely attended, the rivalry between the teams for the championship being very keen. With the dance Wednesday night and the general gathering of members which naturally comes Saturdays, afternoons and evenings, not much time is left outside of working hours in which to become bored with country town life.

Especially important is the effect of the club upon the men with families, who come from other places. The husband has the opportunity to become acquainted with many men and with the families of some of them before he has established a home for the wife and children, and when they arrive in town, instead of experiencing the usual loneliness of being among strangers, acquaintances and friendships are ready for the making.

The influence of living at the club upon the young men is already apparent. A person working in a shop where his hands and face must be blackened by oil and dust of metal is apt to become a little careless of his personal appearance. For certain occasions he will make himself presentable, but in his everyday life he may be more or less slovenly. Such an accusation cannot be made against the mechanics who live at the Windsor Club dining room. At noon there is little time for more than a superficial "dressing-up," but at the evening meal they are up-to-the-minute in their attire. They would feel out of place otherwise. Incidentally one influence to accomplish this condition is the presence in the dining room of young women employees of the company's office who regularly take their meals there.

The club has already outgrown its quarters so far as sleeping rooms are concerned, and the management has prepared tentative plans which would give 100 chambers. Most of these would be taken by the employees. And the club has become the town hotel. When it was opened September 1, the newspaper correspondents and the secret service men who were waiting upon President Wilson at the summer capital in the nearby town of Cornish, gladly sought the new hostelry and were highly pleased with the comforts that were accorded them. Traveling men are put up if there is room for them.

and if no sleeping room is vacant the restaurant serves them well, for the food is really worth while. When the warm weather comes automobile parties will be cared for—many of them pass through the village on their way through the beautiful valley.

The hotel side of the proposition has its place in accomplishing the chief purpose aimed at, to make pleasant the social life of the town. The stranger within the gates adds to the variety of existence. The resident of a great city likes to come in contact with people from other places, even though he may not have a chance actually to meet them. In a small town this privilege is appreciated even more highly. A touch of the cosmopolitan is good for everyone.

Proposed Standard Sizes of Catalogues

A Movement to Secure Uniformity in Advertising Matter

BY ARTHUR HALLER*

Most catalogues at the present day are valuable and are supplied to a carefully selected list of men to whom their contents will be of practical assistance. In the mechanical field particularly a great reliance is placed on the file of catalogues maintained, which in effect becomes a reference library. In full recognition of this condition many of the larger firms have their high salaried engineers devote considerable time to providing valuable information in a lasting form. An attractive booklet reaching the desk of the general manager or purchasing official is much appreciated and after examination is placed on file.

A Selection of Catalogues Made at Random from the Catalogue File of a Prominent Trade Journal

The files of a busy man are carefully maintained and arranged for prompt reference. If the attractive catalogue of the manufacturer is of the size generally favored, its filing is a matter of routine and a place is ready to receive it. If, however, it is larger than the other books in the file, there is no specified place that it will fit and the chances of its being thrown away are greatly increased. It may be thrown into a pile with similar odds and ends where it soon becomes frayed and is destroyed at the next cleaning up.

When one considers the multiplicity of sizes of catalogues in use today, the advantage of a standard size is at once demonstrated. A committee appointed by the Technical Publicity Association to investigate and recommend standard sizes for catalogues, recently measured 927 catalogues and found 147 different sizes, ranging from 3 x 5 to 11 x 14¼ in. An example of the varied number of sizes is presented in the accompanying reproduction of a photograph of a selection made at random from a large catalogue file. A 2-ft. rule in the center serves to show the relative size.

An argument advanced against uniform sizes of catalogues is that individuality would be sacrificed if all catalogues were uniform. A freak size does not tend toward individuality, but lessens the chance of the catalogue being retained by the recipient. If individuality is desired this can be provided on the inside pages and the cover. A catalogue is not for the purpose of exhibiting the individuality of the house publishing it, but to give such information to customers as will be most useful to them.

This matter has been under investigation by the committee of the Technical Publicity Association for the past 18 months, and its investigations have led to the recommendation of 6 x 9 and 8½ x 11 in. for standards for all purposes. Both of these sizes will cut to good advantage with a minimum of waste from catalogue papers now carried in stock by paper manufacturers. Another advantage of the larger size is that catalogues of these dimensions can conveniently be filed with correspondence, as this size will fit standard filing cabinets very nicely. For paper bound catalogues, the cover should be trimmed to the exact size of the inside pages. Deckel edges and overlapping edges make catalogues less convenient to handle and should be discouraged. For catalogues with stiff covers the inside pages should be trimmed to the sizes recommended with a ⅛-in. overlap. This committee also recommended 8 x 10½ in. for bulletins, and this was accepted by the Technical Publicity Association, at its meeting on October 9, 1913, because a large number of companies are now using a letterhead of this size and because bulletins frequently accompany letters and are filed with correspondence. This size is also the one that has been recommended by the Master Car Builders' Association as a standard for catalogues.

The report of the Technical Publicity Association is the same as the reports of similar committees appointed by the American Society of Mechanical Engineers and the American Institute of Architects except that these committees recommended the 8½ x 11 in. size for both bulletins and catalogues. It is to be hoped that all manufacturers will appreciate the importance of this subject and for the benefit of their present and prospective customers will adopt these standards for all future catalogues and bulletins.

*Secretary, Technical Publicity Association, New York City.

Copper Statistics

Henry R. Merton & Co., Ltd., London, England, have issued two sheets bearing on copper statistics. One of these gives the production of copper in 1913 by months in the United States, with the American consumption and shipments, shipments to Europe from Chile and other countries, together with the monthly figures of American stocks and of the combined visible supplies in Europe and America, closing with the average monthly price of standard copper in London. The second sheet is a graphic representation of fluctuations in visible supplies of copper and in values of standard copper in London, by months, for 1911 to 1913, inclusive. A feature of this chart is the fact that the curve of visible supplies descends with an increase in stocks and ascends with a decrease. In this manner the fluctuations in prices are shown to correspond closely with the fluctuations in supplies.

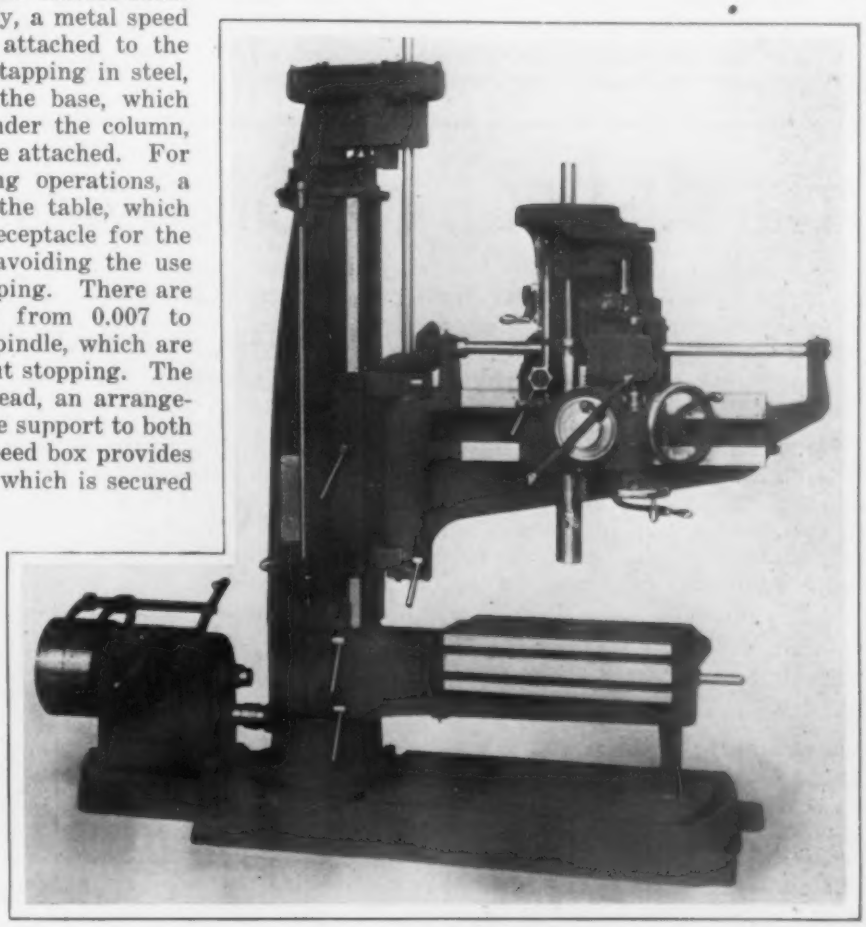
The American Anti-Boycott Association will give its annual dinner at the Waldorf-Astoria, New York, Tuesday evening, February 3.

A Heavy Duty Radial Drilling Machine

The Fosdick Machine Tool Company, Cincinnati, Ohio, has placed on the market a 3-ft. heavy duty box column radial drilling machine. It is adapted for a great variation in work and it is possible to handle drills ranging from 5/16-in. carbon to 3-in. high speed types as the necessary feeds and speeds are available. One of the features of the machine is the use of a box section column and a pipe and beam section arm. To enable the correct feeds and speeds to be obtained quickly, a metal speed and feed plate is conveniently attached to the column. For heavy drilling or tapping in steel, an oil channel is cast around the base, which drains into a large reservoir under the column, where a pump and piping may be attached. For the smaller drilling and tapping operations, a channel has been provided for the table, which drains to one corner where a receptacle for the lubricant may be placed, thus avoiding the use of a pump and special return piping. There are five changes of feed, ranging from 0.007 to 0.031 in. per revolution of the spindle, which are all made by a single lever without stopping. The feed box is placed low on the head, an arrangement which is relied upon to give support to both sides of the feed worm. The speed box provides six changes with a single lever, which is secured by a latch to prevent chattering on the heaviest work. An overtake arrangement is relied upon to avoid shock while changes are being made by keeping the machine running at a reduced speed. The speeds of the spindle vary from 25 to 400 r.p.m.

The column is a heavy one-piece box casting, reinforced by internal ribbing, and the arm is of pipe and beam section. It is emphasized that this construction enables a long saddle bearing to be gibbed securely to the wide, flat face of the column. A special ball bearing supports the arm, an arrangement which reduces the effort and time required to swing the arm from one position to another. The elevating screw, which raises and lowers the arm, is suspended from a ball bearing and the handle is placed below for the convenience of the operator. Safety trips for both extremes of arm travel are provided. The head has an adjustment on the arm of 23¼ in., while the vertical traverse of the arm is 24½ in.

All of the gears are incased to give protection. An adjustable-speed motor, with a range of 3 to 1 can be used, these motors to develop 3 to 5 hp. and connected by rawhide gearing. Although the machine is termed a 3-ft. radial drilling machine, the maximum distance from the spindle to the column at the base is 39 in. and between the spindle and the base the maximum distance is 52 in. The net weight is 4200 lb.



A New Heavy Duty Box Column Radial Drilling Machine Designed to Handle a Great Variety of Work

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The development of dynamic braking for coal and ore handling machinery was outlined in a paper presented by Clark T. Henderson, electrical and mechanical engineer Cutler-Hammer Mfg. Company, at the annual meeting of the American Society of Mechanical Engineers in December. The advantages and limitations of this method are discussed, together with the application of automatic control methods for limiting excessive speeds in lowering.

Gas Without Coke

Attempts to turn practically the whole of every ton of coal into gas are being realized in Vienna, Austria, where Dr. Strache appears to have gone some distance toward a partial solution of the problem. His process has advanced beyond the experimental stage, and one or two plants are now actually in operation. According to the London Times, "the system embodies the complete gasification of the coal and coke in one operation, thus avoiding the dual plant and two distinct processes of making coal gas and water gas found in gas works today. Instead of first carbonizing the coal, discharging the coke, and then conveying it to the water gas plant, the coal is completely gasified in a special producer somewhat similar to a blast furnace. In consequence, the thermal losses are reduced to a minimum. The low grade gas obtained during the 'blow' is employed for carbonizing the top layers which consist of coal. The heat is applied externally and the coke produced tumbles direct into the lower producer. The coal gas coming away from the producer is ingeniously separated from the producer gas, and when the generator has reached a sufficient temperature the contents are steamed, and the resulting water gas is passed through the coal at the top, which accordingly undergoes complete carbonization. The gas obtained is, of course, inferior to that sent out for consumption in this country, and has an average calorific value of 375 B.t.u. per cu. ft. The approximate price it commands on the Continent is said to be 1s. 5d. per 1000 cu. ft., and as the yield of sulphate of ammonia is about 32 lb. per ton of coal gasified, and benzol is also plentiful, the process should prove remunerative in those districts where it can be used."

Appreciation of Mr. Ford by the Author of the Acco

The man so situated in his business relations that obligations to associates and stockholders do not command him, regardless of his own desires, is the rare exception. Such a man is Henry Ford. The Ford Motor Company has comparatively few other stockholders. They own collectively a minority interest. To most of them the epochal prosperity of this company has returned unearned increment. Henry Ford personally has never had a more than incidental interest in the accumulation of money. For him the business has offered more absorbing problems. Schooled in the atmosphere of the shop, the thought of sharing the profits that have been piling up may be accepted as a natural development and unquestionably has long been in his mind. As for his associates in the Ford Motor Company who in the past have been more mindful of financial matters it may be suggested that they now find the humanitarian viewpoint agreeable and one to be accepted with interest.

But the idea of a $5 minimum wage and the actual inauguration of a profit sharing plan—these were impromptu. One may even say that the $5 minimum was Mr. Ford's idea by adoption. Inspira-

The Ford Plan for Employees' Betterment

The Ford Motor Company's 125 Per Cent. Pay-Roll Increase Involving Perhaps $15,000,000 and What the Employees Are Expected to Do With It

What have been considered the essential features of the Ford profit sharing plan, placed in operation January 12, have already obtained wide publicity. To the average man of business who finds himself each succeeding year under the necessity for practising additional economies to maintain the current rate of profit, the plan as reported has seemed so incredible that we shall set down, as follows, what it is proposed to do.

1. The proposition does not provide for any change in the scale of wages, but rather, the addition of a share in the profits to each man's present wage. The general scheme for classifying all of the labor employed, as described in *The Iron Age* of January 1, is retained as the fundamental basis for rating the men now employed and those to be hired. The company makes it very clear that the amount to be given the men, according to the announcement recently made, covers the period of 1914, only, and is subject to such fluctuation after 1914, as the profits of the company may dictate.

2. In 1914, there will be added to the present daily wage of every man eligible under the plan and now earning up to 38 cents per hour, an amount such that the daily remuneration in each case will be $5. To the wage of every eligible employee now earning between 38 cents and 48 cents per hour, there will be added an amount sufficient to make his daily return $6. To the wage of every eligible man now earning from 48 cents to 54 cents per hour, a share of the profits will be added sufficient to bring the day's remuneration up to $7.

EMPLOYEES GROUPED IN FOUR CLASSES

3. As applied to the salary pay-roll a division into four classes is made.

First: $200 a month, and over.

Second: Men over 22 years of age now earning less than $175 per month.

Third: Men under 22 years of age and women.

Fourth: Salesmen.

Of the men included in these divisions, the first class is unaffected. The annual bonus system through which the company rewards its higher salaried men for special services during the year continues applicable to them.

In the second class those earning $100 a month will now receive a minimum of $5 a day. Those now receiving from $101 to $135 a month will under the plan receive $6 a day. Those whose salaries range from $136 to $175 will receive $7 a day. In the third class, a salary of $30 a month will entitle the employee to $2 a day; $40 a month, $2.50 per day; $50 a month, $3 per day; $60 a month, $3.50 per day; $75 a month, $4 per day, and over $75, $4.50 per day. Salesmen under the fourth class will be entitled to a minimum of $5 per day.

4. Employees eligible under the profit sharing plan include all men over 22 years of age who satisfactorily pass the company's requirements with respect to personal record. The plan also includes all male employees under 22 years of age upon whom a near relative is dependent for support. The same is true for the women in the employ of the company who are the support of near relatives. For all others, the wage and salary scale in effect before the inauguration of this plan continues in force.

5. In place of two shifts of 9 hr. each, the company has inaugurated the continuous operation of the plant on the basis of three 8-hr. shifts. This change-over has not yet been completed for all departments of the plant, but will be as soon as possible. The provisions of the profit-sharing plan apply to the 8-hr. period only. Overtime, when necessary, will be paid for at 1½ times the previous rate.

6. The Ford Motor Company does not wish to change the present standard of labor employed in its plant Three-quarters of the employees are of foreign birth; a large number of them non-English speaking and of the grade ordinarily fitted for common labor. In the Ford plant they have been trained to a high grade of skill—each for a particular operation. The increment added to wages under the plan will not result therefore in the attraction of a higher grade of workmen and their substitution for the class at present employed.

7. Whenever possible, and the process is continuous, the company shifts a man from one operation, when he has acquired considerable skill, to some other operation. Every such move represents an advance in the organization and constitutes progression on the basis of the skill-wage plan previously referred to. In accordance with the same plan, when a man fails to make satisfactory improvement he is given an opportunity to make good in some other department and on the basis of efficiency alone is discharged only as a last resort.

ying Article, O. J. Abell, Western Editor, The Iron Age:

tion for the plan arose from the question "How can we change our present operation so as to give employment to more of the idle men of Detroit?" Convictions, reached so quickly as to have the appearance of impulse, are characteristic of this man. With him execution follows with equal speed and the certainty of successful completion may not be questioned. Consistently, this has been the history of the unique business, the development of which he has directed.

On December 31, the suggestion for shortening the working schedule so that more men might be employed was made by Mr. Ford. There was then not even a plan, to say nothing of details. On January 12 the plan was placed in actual operation, affecting 16,000 men already employed and 4000 about to be hired. Twelve days—while the world is still wondering, the thing is done. This article is simply a relation of fact and comment as they were found. It does not present the writer's opinions except in one respect—that this plan so novel as to be received with almost universal skepticism was inspired entirely by humane purposes and lacks utterly a foundation in ulterior motives.

THREE SHIFTS TO PROVIDE WORK FOR MORE MEN

8. The adoption of a shorter working period making it possible to hire more men was entirely for the benefit of men without other employment. The investigation of each applicant covers the matter of his previous employment, and the idle men of Detroit are given preference over those without employment from other localities who make application. It is not possible for a man to secure a position who, having employment in another factory, leaves his job for the purpose of securing one at the Ford plant. The Ford Motor Company has farthest from its intention the expectation of drawing upon the organizations of rival manufacturers. It is inevitable, however, that many concerns who are now operating at a low rate will find upon a return to more heavy operations, some of their employees who were laid off, in the employ of the Ford Company.

DETAILED RECORDS OF THE EMPLOYEES

9. The company has organized a corps of investigators nearly 100 in number, each supplied with the services of an interpreter and with an automobile at his disposal. These investigators are for the most part physicians who have been associated with the company's medical staff; others of the investigators are among the oldest and most trusted employees of this company. This corps of investigators requires of each present employee, and each applicant for a position, the following information:

Full name; address; age; whether married or single; the number of children and their ages; the number of children attending school; the number of children working; the number of people dependent; facts concerning the home, covering the rent paid; whether or not the home is owned; its value, whether it is free from encumbrance, and what balance, if any, is still owed. Concerning other assets, information is required, as to the savings account; where located, and if possible, the pass book number; real estate, life insurance and miscellaneous.

Each individual is required to submit to a physical examination; complete data as to habits and moral tendencies are secured; the kinds of recreation to which the individual is given are also discovered, and the above, with whatever general information the investigator may secure bearing upon the general character of the employee, are tabulated in a report which becomes a permanent file. If the information as first obtained is verified by personal investigation, which investigation is carried on through the channels of the tradesmen, landlords and banks of the city, and is of such quality as to stamp the man either obviously good or bad, the report is acted upon on the strength of the investigator's report. The record of men of doubtful character and habits is passed to a committee of five, on which Mr. Ford himself acts.

THE DISPOSITION OF THE INCREASE TO BE WATCHED

10. The investigation and supervision outlined above is not to be a matter of form, but in fact, the really important part of the company's programme. It is the very definite purpose of the company to make the distribution of this increment a constructive measure. In addition to the money to be required for actual distribution in the pay envelopes, the company has committed itself to whatever expenditure may be needed to bring about a proper disposition of the increment by the employees for their own real and substantial benefit. When required because of their record the employees will be given to understand that a portion of the money must go toward a steady growth of savings accounts; that a portion must go toward the improvement of living conditions, where those living conditions, as in the case of most of the foreigners, are decidedly objectionable. A portion must go toward the better education of children and the proper care of dependents. The company also will insist that the building and owning of homes be a logical development. The increased earnings are not expected to result in a corresponding increase of remittances to Europe, and an effort is to be directed toward the accumulation and investment of the funds in Detroit.

11. Over against the opportunity for securing continuously these exceptional earnings; in other words, the opportunity for holding employment with the Ford Motor Company, the company requires conformity with its general plan for the betterment of the employees. A very essential feature of the company's plan, however, lies in the fact that the company's supervision is not to be obvious, but that the employees shall proceed to their self-improvement on their own initiative. So long as the employee maintains the standards demanded, he will never be made conscious of supervision.

ADVERSE CRITICISM OF THE PLAN

Criticism of the Ford profit sharing plan as it has appeared in the comment both of manufacturers not directly competitors either as regards product or labor and of those manufacturers in Detroit, who, if any, will be directly affected, may be reduced to three general ideas.

a. The unwisdom of mortgaging the future of one's business by the voluntary imposition of an abnormally high labor cost.

b. The establishment of this increased return to labor on the basis of an arbitrarily assumed minimum cost of living is certain to create discontent in the minds of the employees of other manufacturers whose scale of wages is not so high, and will inevitably result in a higher cost of living for the employees.

c. The inconsistencies of the Ford Motor Company itself, as represented by its purchasing meth-

ods in contrast with its lavish distribution of profits to its own employees.

WAGE REDUCTION WITH A DECLINE IN PROFITS

Concerning the first criticism: Mr. Ford believes that his employees are capable of understanding that the increment is a distribution of profits for the current year, and that they will accept a reduction in that distribution if the company's profits decline. Most manufacturers are unwilling to concede as much. As for the minimum of $5 being too large an amount for the labor performed, as compared with the scales established by the prevailing competitive market, it is the belief of the Ford Motor Company that the production to which each employee contributes in its plant under the system in force is correspondingly as much in excess of the production per man elsewhere, as the Ford daily minimum is in excess of the corresponding wage elsewhere. It is also true that under the stimulus of the increased reward the production for the 8-hr. shift in practically all departments of the plant is as large, and in some cases larger than was the production for the 9-hr. period previously in force.

It is maintained by the average manufacturer that however excellent any product, or however improved the methods employed in its manufacture, there is certain to come some other individual or organization capable of doing equally well. If, in addition, the newcomer can hire men at a considerably lower wage, the unique position of the first product is at once undermined, and the original manufacturer finds himself forced to reduce wages in order to compete, and in addition, has a disgruntled organization. That the average employee of today is not an especially reasonable being is already in evidence at the Ford plant, where, for example, certain of the employees who received 38 cents per hour and now receive $5 per day, feel that they are not being equitably treated, inasmuch as the man who was earning but 26 cents per hour is now also receiving $5, notwithstanding the fact that earnings have been greatly increased in each case.

As regards the future it seems clear that for Mr. Ford, "Sufficient unto the day is the evil thereof"; that as long as he has work to offer he will be able to secure men to work for him at the market price, and that if in the meantime he is able to do something for them that will better their condition, so much of good will have been done for at least that period.

THE IDEA OF THE MINIMUM WAGE

The answer to the second criticism is necessarily somewhat speculative in character: "Scientific management" has its foundation in an exhaustive study of human performance. From this study determinations have been made of the amount of work a man should do in a day, working efficiently at various tasks. It has been maintained by some students of sociology that a similarly thorough study of the living conditions of the various classes of labor would result in a like knowledge of the average sum of money labor of the different classes requires for maintaining itself perfectly in its particular sphere of life. These students further argue that the minimum sum so determined is thus logically the natural reward to which the employee whose task is set is entitled for the labor he performs. This proposition parallels in a measure at least what is in Mr. Ford's mind and it appears to be his hope that other manufacturers may so adjust their operations as to approach some such equation of a fair day's wage for a fair day's work.

The extent to which discontent will develop has a number of limitations. Investigation in Detroit seems to indicate that among the men having satisfactory employment in other lines, the distribution of profits at the Ford plant is received in an impersonal way and is classed as a unique situation comparable with the many other unique events in the history of the Ford Motor Company. It should be noted that previous to January 12 the average wage at the Ford plant was considerably less than the average wage at other automobile plants.

THE COMPANY'S PURCHASES AT LOW PRICES

The criticism leveled against the Ford Motor Company for its own inconsistencies reveals a very interesting policy on the part of that company. It is true that the Ford Motor Company has used its position as an exceptionally large buyer to secure the lowest possible prices in buying materials. It is also true that employees of some of the concerns which depend largely on their sales to the Ford Motor Company have suffered wage reductions ostensibly because of the low prices at which their product was sold. It has been pointed out that the position of the Ford Company is a parallel to that of the rich man who in his business dealings amasses money by close dealing, which money he subsequently lavishes upon luxuries for his own family. This is not exactly the case. The Ford Company believes that the same methods which enable it to earn the profits it has earned, can be employed by those who furnish it material in corresponding quantity. The Ford Company proposes to lend its influence and assistance toward the installation of similar methods in the plants of those manufacturers from whom it buys, so that the prices at which it buys will not work a hardship upon those employees any more than the sale of the Ford motor car at a price exceptionally low affects the wages of Ford employees. Where it is impossible to bring about these improvements in the methods of manufacturing purchased materials, the Ford Motor Company proposes to extend its own operations to cover the manufacture of those materials and thus make available to the additional employees engaged, its profit sharing distribution.

The relations of every right minded employer to his employees have in them something of paternalism. And it is more pronounced where the employer inaugurates betterment plans of any kind for his employees. Paternalism is most objectionable when the initiative and self-reliance of the beneficiary are impaired. It is the belief of those who worked out the Ford plan that no satisfactory substitute can be found for money, paid as the daily compensation for daily labor, in creating a satisfied organization of workmen. It is intended that the employee's initiative shall be unhampered except as it is guided only by helpful suggestion as long as he remains an employee. The company believes that it is securing value received for every dollar put into the pay envelope, and it proposes that no occasion shall exist for any employee's thinking he is not in the midst of an exacting competitive struggle for the position he holds.

PROFITS 15 PER CENT. ON THE TURNOVER

The immense sum of money for the distribution of which the Ford profit sharing plan provides, and the company's own statement of the amount of money that has been accumulated in capital and surplus accounts have concentrated public attention upon the profits of this company's business. With the granting of a 125 per cent. increase to labor, the criticism has arisen that the Ford Motor Company

has forgotten something of its obligation to the public. Instead of so prodigal a sharing of profits with employees a large majority of whom, because of their ignorance, could have had no sense of co-operation in the company's success, it is claimed that the public should have some of that profit in the form of lower prices. In reply to this it may be stated simply as a fact that the Ford profits have been limited to 15 per cent. on the turnover each year. It should be remembered also that the company in its announcement expresses the hope that it may continue its policy of reducing prices in the future as in the past. It is almost obvious that the price of Ford cars will have to come down as the production increases. It is the confident expectation that the time will come when 3000 Ford cars can be marketed each day. There is a certain number of people who will pay $600 for a car. There is a large number who will pay $500 and a still larger number who will pay $450. In other words, the Ford Motor Company is its own greatest competitor. The price of this car has been reduced in the past by such amounts as would sufficiently broaden the market to absorb the increasing production of the Ford plant. It is distinctly one form of competition and those who insist that the wages of labor should be determined by competition can hardly urge with consistency that prices be determined for a finished product on any other basis.

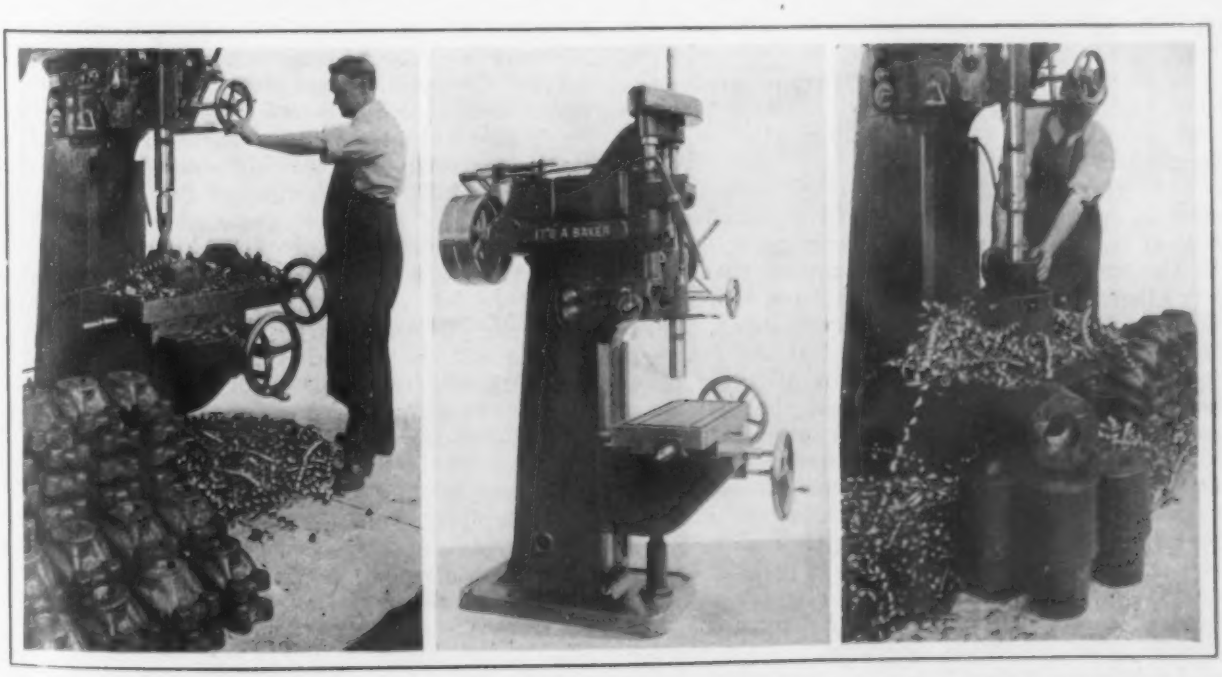
A Large Ball-Bearing Drilling Machine

A drilling machine designed to handle 2½-in. high speed drills in solid steel has been placed on the market by Baker Brothers, Toledo, Ohio. The speed changing mechanism is equipped throughout with ball bearings. Six changes are available and in securing these there are no idler gears running, only one pair of gears being in mesh in the gear box at any one time. The speed range conforms as nearly as possible to the scale being advocated by efficiency engineers. A view is presented of the machine itself, employed in performing two operations.

The spindle is 2 in. in diameter at the driving end and runs in a quill or sleeve having a steel rack 1¼ in. wide cut on the outer face. The thrust of the spindle while drilling is taken on ball bearings. All the gears in the driving train except the large top driving gear are of oil treated and hardened steel and run in an oil bath, protection being furnished by a set of guards. With a driving pulley speed of 500 r.p.m., the spindle has six speeds ranging from 92.5 to 500 r.p.m., and any one of these can be obtained by sliding gears controlled by a single lever within reach of the operator. A vertical feed of 16 in. is provided and the spindle is equipped with a depth stop. Twelve feed changes can be secured by a dive key and quick change slip gears. The range of feeds extends from 0.006 to 0.032 in. per revolution of the spindle. To protect the feed mechanism from injury a safety device is provided on the spindle feed shaft.

Either plain or compound tables can be supplied. Both of these are of the box knee type with heavy ribbed reinforcing. The plain table measures 24 x 29 in. overall and is elevated by a screw, the distance between the end of the spindle and the top of the table being 32 in. The working surface of this table inside of the oil groove measures 17 x 23 in. The compound table has screw adjustments in all directions, which it is emphasized are an improvement over the rack and pinion movement, and are smooth, rapid and positive. Micrometer collars are provided for the in and out and cross movements, and it is emphasized that fine adjustments can be made and it is unnecessary to lock the table in position after these have been made. The table has a vertical travel of 16 in. and the distance from the top of the table to the end of the spindle is 25 in. The over-all dimensions of the compound table are 16 x 36 in.

One of the operations being performed by the machine in the accompanying engraving is the drilling of a 2½-in. hole through a hammered steel forging 14 in. long. In this case the machine is equipped with a plain table and a hole 1⅛ in. in diameter is first drilled through the forging. The 2½-in. hole is then drilled in 5 min. and this hole is enlarged to 4 in. in diameter for a depth of 4 in., the time required being 4½ min. In the other photograph the machine is shown drilling a hole 2½ in. in diameter and 2¾ in. deep in drop forged iron saddles. These holes were drilled in 37½ sec.



View of a Recently Developed High Speed Drilling Machine Equipped with Ball Bearings and Two of the Operations Performed by It

The Power Required to Roll Steel

The Equipment and Methods for Ascertaining Rolling Mill Requirements Made the Subject of a Symposium in Pittsburgh

A broad discussion of the power required to roll steel, in that it was participated in by a large number of engineers calculated from their positions to be qualified to consider the subject took place at a meeting of the Engineers' Society of Western Pennsylvania at Pittsburgh, October 21, 1913. The discussion developed on the presentation of a paper entitled, "Measurement and Calculation of the Power Required to Roll Steel," submitted under the joint authorship of H. C. Siebert and Charles Fitzgerald, Jr., steam engineer and assistant steam engineer, respectively, of the Duquesne Works of the Carnegie Steel Company. The official publication of the paper and of the discussion has now been made and occupies 131 pages of the November Proceedings of the society. The paper itself, which was very generally accorded words of commendation, is quite clearly a painstaking study of every investigation of which there is a record, and as one of the speakers said, is a code or the basis of a code for ascertaining the power requirements of the rolling mill. It is not a character of paper which lends itself well to abstracting to the space limitations here demanded nor does the ready availability of the paper warrant reprinting it at length.

THE SIEBERT-FITZGERALD PAPER

The Siebert-Fitzgerald paper, it may be said, however, enters early on a review of published data and exhibits in convenient form the principal findings of investigators abroad in their attempts to determine the theory and laws of the flow of metal in rolling and the complicated factors of roll train resistance. The authors reproduce a number of interesting diagrams from these contributions to explain what happens in rolling, but they affirm that satisfactory mathematical analysis of the resistance which a solid body such as steel presents against permanent deformation in a simple roll pass, to say nothing of the more complicated pass, does not exist. What must be known definitely they assert are the flow of metal which takes place in roll grooves and the strength of steel at high temperatures.

The remainder of the paper is mainly a description in detail of the apparatus and methods of a test of a two-high reversing blooming mill driven by the twin tandem compound engine, the test of any other type of mill being considered as a simplified form of this one. While the stranger to such tests might perhaps be overawed at the range of instruments enumerated and their elaborate character, the authors emphasize that the data of a complete power test enables one to arrive at several valuable results other than the power required to roll steel, or the steam consumption of the engine, such as the influence of roll passes of different forms on the power peaks, engine and mill efficiency, tonnage capacity, stresses in parts of engine or mill, etc. Ten men in addition to the engineer in charge, it is stated, are required for a complete test with the apparatus described, and the amount of labor in evaluating the data is suggested by the fact that for a test of a 3-ton ingot rolled to a 4 x 6-in. billet in 19 passes, there are 8 indicator diagrams of about 250 cards each to be measured. In evaluating the indicator diagrams from a reversing mill engine the authors call attention to something which apparently is overlooked by others, namely, that care must be taken to recognize the negative cards, that is, the cards formed when the pressure on the exhaust side of the piston exceeds the pressure on the working side. In concluding the paper the authors mention the severe conditions of rolling mill operation on the prime movers. The forces at work, they put it, are of a magnitude that within two or three consecutive strokes the cylinder effort will vary from zero, or even negative, to a maximum positive, and these variations can occur within one or two seconds, more or less depending upon the speed.

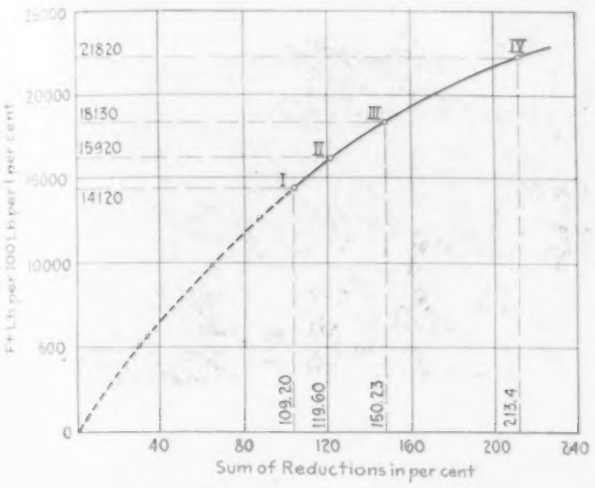
THE DISCUSSION

The discussion, which takes up much of the printed report, as suggested, is presented in an unusual way in that every contribution is replied to by the authors before the reader reaches the next, and it would appear that there is no criticism adverse or otherwise that the authors did not answer and commonly in no uncertain terms.

The first contribution to the discussion is that of Victor E. Edwards, vice-president Morgan Construction Company, Worcester, Mass., printed in full in *The Iron Age*, December 4, 1913. The second is that of F. G. Gasche, mechanical engineer Illinois Steel Company, South Chicago, who emphasizes that the state of the art with reference to the energy requirements of roll train operations has not reached the stage where we can write out specifications for the roll turner, giving preference to certain fillets, collar angles, depths of grooves, etc., as a means of improving the product. To a small degree, it has been possible to secure some improvement in power demands, and the distribution of effort over a number of consecutive roll passes. As matters stand to-day, the roll turner, through a long personal experience, prepares templates for a set of grooved rolls that "look about right," and the engineer must devise the means of turning the mill against such resistances as will attend the use of the rolls. In the feeble light of such precedents as were available, not to say the handicap of too much "practical" experience, was born the expression "Power required to roll steel." Power is a *rate* of doing work and "Power to roll steel" is indicative of nothing but the fact that the faster the steel is pulled through the rolls the more "power" is required. "I am prepared to say," he says, "that the term 'horse power' has no legitimate place in the language of the designer of mill drives so far as the specification of the fundamental characteristics of such driving mechanism is concerned." The item of the utmost concern, with reference to roll train phenomena, is the momentary resistance, say torque, imposed by the rolls on the engine or motor.

F. B. Crosby, engineer General Electric Company, Schenectady, N. Y., in emphasizing the need of information concerning the requirements of rolling steel, says that estimates for the power requirements for a given mill made by several well-

known mill and engine builders varied from approximately 400 hp. to over 2000 hp., yet all estimates were based on the same data. There is today, he continues, in this country at a conservative estimate 225,000 hp. in the aggregate of electric motors driving main rolls, and this is but the beginning.



Apparent Relation between Rolling Effort and Sum of Reductions in All Passes

J. W. Shepardson, assistant chief engineer Cambria Steel Company, Johnstown, Pa., supplies some interesting information of a test some six years ago when a continuous billet mill was projected by the Cambria Steel Company. It became necessary to determine the size of engine for it, and experiments on the work of rolling were undertaken on a three-high mill, to serve as a basis. The proposed mill was to be a twelve stand mill having three 21-in. stands and nine 18-in. stands. The mill on which the power tests were made was a three high 22-in. mill roughing 4 in. by 4 in. billets to 1¾-in. square billets. Instead of using a tachograph and computing the effect of the speed variations, the engine was allowed to fully recover its speed after each successive pass in order not to have any variation in the stored energy. The work of rolling for each interval then became the difference between the work expended and what it would have been over the same period had the mill remained empty. From these experiments a work factor of 12,000 ft. lb. per per cent. reduction per 100 lb. of material was determined for breaking down 4-in. by 4-in. billets. It was felt that this factor could be used to apply to the projected mill, since this mill was to reduce in approximately the same manner and to the same extent per pass. Although no extensive tests were made on the 18-in. continuous mill after it went into service, indicator cards show that the engine is called upon to develop approximately the power that was predicted.

It subsequently devolved upon the engineers of the Cambria Steel Company to determine the power requirements for a proposed group of electrically driven merchant bar mills consisting of the well known continuous roughing and strand finishing type. At that time more data had been collected both from further experiments and the interpretation of published articles. After the mills were put in service the Cambria Steel Company's engineers conducted some extended tests on these mills to verify their basis in proportioning the drives and to obtain further data. These tests were of long duration and covered actual rolling conditions. Table 1 gives a summary of one of the typical series of tests on a 10-in. six-strand continuous roughing train.

Table 1—Summary of Tests of a Continuous Roughing Train

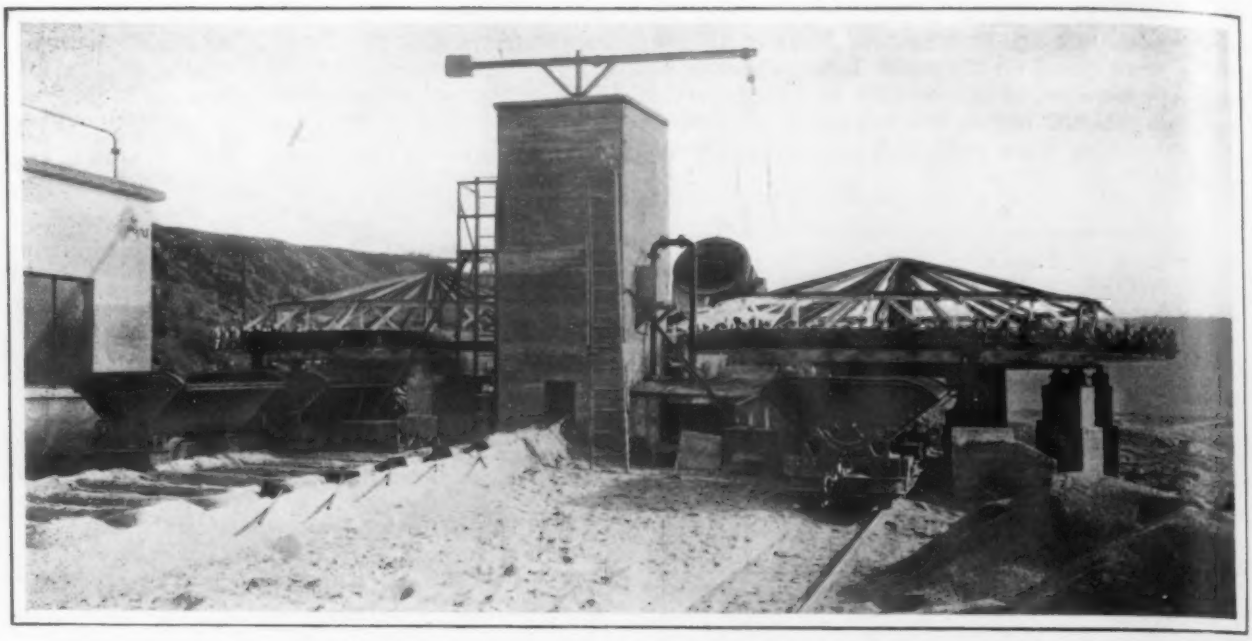
Test	I.	II.	III.	IV.
Duration of test—hours	10.000	8.300	6.500	4.183
Actual rolling time—hours	6.929	5.718	3.257	3.428
Number of passes in use	6	6	4	4
Weight rolled—pounds	90,928	116,566	72,821	119,600
Average temperature—Deg. Fahr.:				
Entering mill	2,252	2,200	2,120	2,190
Leaving mill	2,077	2,110	2,060	2,080
Sum of reduction of all passes	213.4	150.23	119.60	109.20
Total input—K. W. hours	2,400	1,865	910	1,070
Rolling factor in ft. lb. per 1 per cent reduction per 100 lb. of material	21,820	18,130	15,920	14,120
Size of initial section	1¾ by 1¾ billet	1¾ by 1¾ billet	1¾ by 1¾ billet	1¾ by 1¾ billet
Material—Bess. ult.	66,100	66,020	66,250	.....
Open Hearth	.....	.....	.....	62,700

The rolling factor resulting from the four tests described in Table 1 is by no means uniform, though determined on the same mill at practically the same temperatures, from the same initial size of billet substantially of the same quality and with the same instruments. If this factor be plotted against the sum of the reductions in all the passes, as in the accompanying cut, a smooth curve joins these points and would seem to indicate that some such relation may exist, for in the absence of sufficient supporting evidence it would be unwise to be too definite.

M. F. McConnell, superintendent Mingo Works, Carnegie Steel Company, Mingo Junction, Ohio, suggests the futility of heavy flywheels on many mills which fall in the continuous rolling class, and the probabilities of a tremendous loss of energy due to turning these flywheels, as well as the failure to stop the engines so driven when for relatively short, but frequent, periods they are not doing useful work.

Discussions are also printed from W. E. Snyder, mechanical engineer American Steel & Wire Company, Pittsburgh; W. C. Coryell, assistant professor of steel works engineering, Carnegie Institute of Technology, Pittsburgh; J. A. Knesche, steam engineer Riverside Works, National Tube Company, Wheeling, W. Va.; Wilfred Sykes, engineer Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa., who agrees that the power required per cubic inch displacement is the simplest and most satisfactory unit in investigations of the sort covered by the paper; Karl Nibecker, steam engineer Youngstown Sheet & Tube Company, Youngstown, Ohio, and by Prof. W. Trinks, professor of mechanical engineering, Carnegie Institute of Technology, Pittsburgh.

Fairbanks, Morse & Co., 30 Church street, New York, have been appointed the exclusive sales agents in the United States for the Canada Carbide Company, which is a very large producer of calcium carbide, with factories at Shawinigan Falls, Quebec, and Merriton, Ont. Owing to the removal of the duty on carbide, this company is in an excellent position to serve the northeastern portion of the United States. Carload orders can be filled advantageously by direct shipments from either of the above plants, but Fairbanks, Morse & Co. will also carry complete stocks of all commercial sizes in New York, Baltimore, Springfield and at various other points. With the growing use of oxy-acetylene cutting and welding plants, there is an increasing field for the use of carbide. Fairbanks, Morse & Co. will be pleased to send catalogues and copies of rules of the British Association of Acetylene Engineers, to whose standard the Canada Carbide Company's product is made.



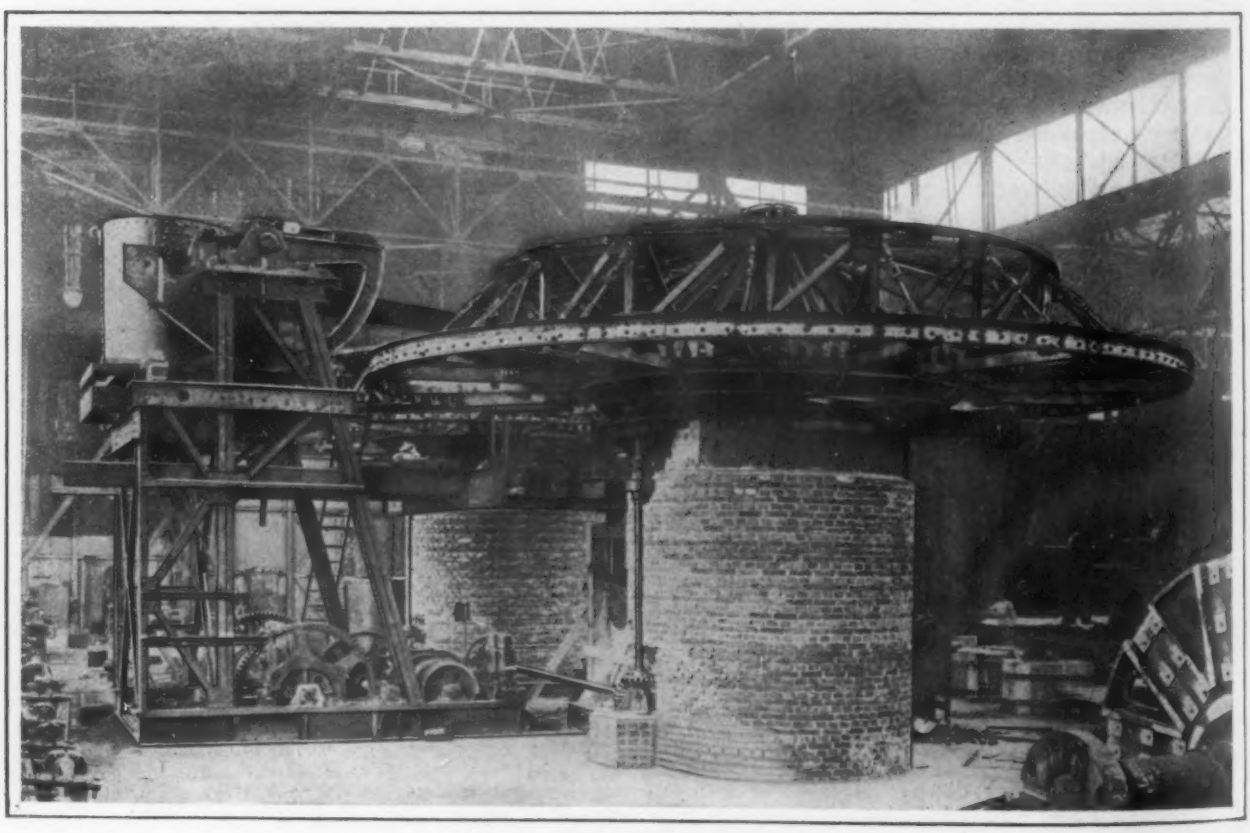
Casting Machine of the Aplerbecker Huette, Hydraulically Driven

NEW PIG-CASTING MACHINE

A German Mechanism of 500 Tons Capacity and Novel Design

A new horizontal turn-table pig-casting machine is being successfully introduced in Germany. It consists of two horizontal turn-tables of about 30 ft. diameter, as shown in one of the illustrations, which are built up of structural shapes connected to a cast-iron hub. Sixty-four molds are arranged radially between two concentric rings in each table. They are mounted on pins so that they can be tilted for emptying. In the central axis between both tables an inclined pouring trough leads to a double spout which can be tilted either to the right or to the left. Both tables advance alternately by the pitch or the distance between two molds. While one table is stationary and a mold is being poured, the other one moves ahead by the length of the pitch and then stops; the spout is then tilted and the iron flows into an empty mold of the second table while the first one moves ahead, and so on.

The feed motion of the tables works in conjunction with the tilting mechanism of the pouring spout, and is so adjusted that an empty mold is always under the spout whenever this is tilted from one side to the other. There is also a neutral position and a spout in the direction of the axis of the pouring trough for the purpose of pouring any iron remaining in the ladle into an emergency sand bed, in case anything should go wrong with the machine. After the molds have been poured they move through an arc of about 270 deg., during which time

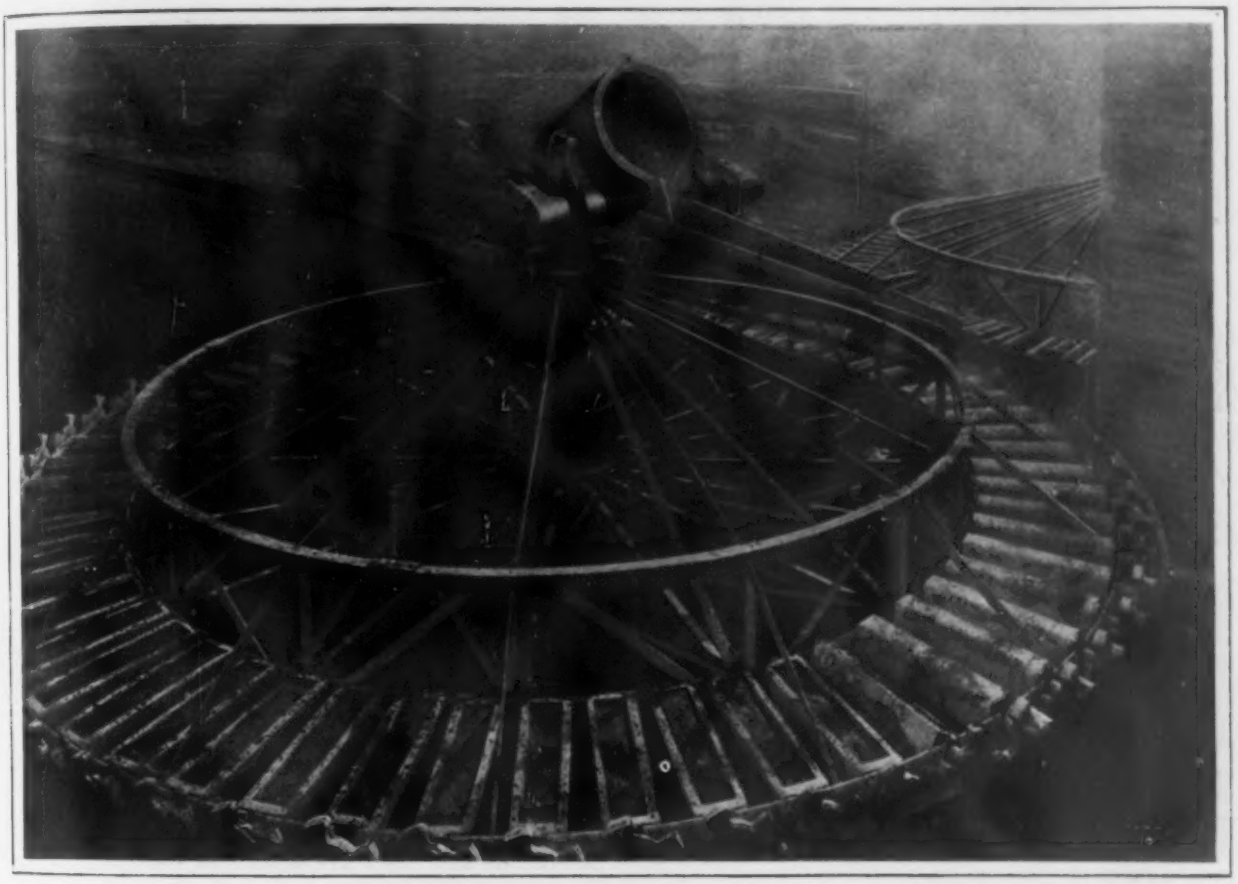


Casting Machine at Gelsenkirchen Driven by Electric Motor

they cool off. They are then automatically tilted, the pigs dropping out and falling into a car. The entire machine is located high enough above the ground to allow a railroad car to pass underneath. The empty molds are then sprayed with a solution of lime and turn back into their original position before the table completes a full revolution and are then ready to be filled again. A hammer taps the bottom of the upturned mold for the purpose of loosening any pigs that might stick.

The entire machine is driven by a single electric motor of 10 hp., and from this all the various parts are actuated. All the mechanism that could possibly be damaged by stray particles of iron is kept as short as possible and the machine should run steadily. For this reason they are not water-cooled, as this would mean an extreme change in the temperature. The machine is operated by one machinist, who starts and watches it, and a helper, who attends to the oiling, cleaning, etc.

This casting machine was built by the Deutsche Maschinenfabrik A. G., at Duisburg, Germany, represented in New York by Neumeyer & Dimond, 82 Beaver street. The first machine, which was hydraulically driven, has been in constant use since February, 1912, at the blast furnace plant of the Aplerbecker Huette, and has given very good results. Two pictures of this machine are shown. A



Casting Machine of the Aplerbecker Huette, Hydraulically Driven

located in the hollow brick foundation and is readily accessible. The turn-tables are attached to heavy vertical shafts which turn in large bearings, and thus insure a true and smooth running. The latest machine, shown in one of the illustrations, is provided with a special ladle of 16 tons capacity, into which the iron is poured when it comes from the blast furnace, and which is tilted by a mechanism in such a manner as to insure a uniform flow of metal, regardless of the position of the ladle. An automatic cut-out stops the machine when the ladle has reached its highest position, The hot metal can, however, be run into the special ladle directly from the furnace and be poured into the molds after the ladle has been set into the tilting mechanism.

The weight of the pigs is adjusted by means of change gears in the tilting mechanism. The capacity of the machine described is from 20 to 30 tons per hr., according to the size of the pig being made. The size and weight of the pigs is quite uniform, and the appearance of the fracture is good. It has been found that a better looking fracture is obtained if the temperature of the molds is kept uniformly high, which means that the interval between two successive pourings into the same molds should be

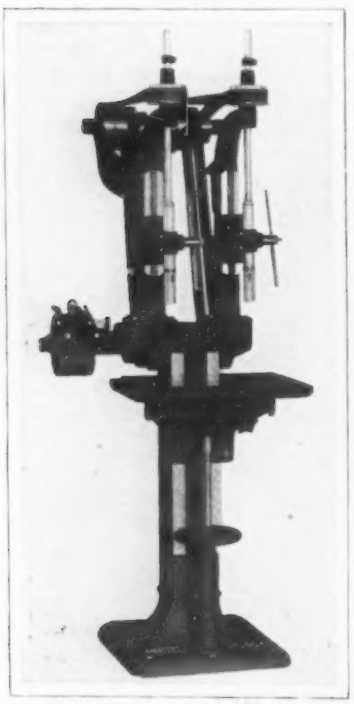
second machine was delivered to a large steel works at Gelsenkirchen, and is driven by an electric motor, as described above. It has been in operation since May, 1913, and is illustrated here. This type of machine is adapted, not only to the mechanical casting of pig iron, but also of copper, zinc, lead and other metals, in view of the good appearance of the pigs and their uniform size and weight.

Exporters of machinery will be interested in the announcement by F. V. Miller, 11 Broadway, New York, that he has compiled and printed a list of 1200 of the leading dealers of the world in machinery, machine tools and kindred lines, covering 133 of the most important foreign cities in which machinery and machine tools are used. Details are given regarding correspondence, foreign postage, freights and general information necessary to a successful campaign. The list is sold at $10 per copy.

Corrigan, McKinney & Co., Cleveland, Ohio, blew out their Scottdale blast furnace at Scottdale, Pa., January 24. The firm announced that the stack was blown out because it has 20,000 tons of pig iron in stock and also owing to the absence of new orders.

Compact Two-Spindle Drilling Machine

The Rockford Lathe & Drill Company, Rockford, Ill., has brought out a new line of multiple-spindle sensitive drilling machines. These are built with either two, three or four spindles, the first being the one illustrated. As will be noticed from the illustration the machine is quite compact, the size of the table being only 12 x 20 in.



A Two-Spindle Sensitive Floor Drilling Machine Designed for Rapid Production and Occupying a Small Amount of Floor Space

The table is raised and lowered by a handwheel and the maximum distance between it and the spindle is 27 in. Adjustable supports are provided and the table may be removed for replaning when badly worn. The spindles, which are ¾ in. in diameter, are of forged and ground high carbon steel and have a No. 2 Morse taper hole in them to accommodate ⅜-in. drills. They have ball thrust bearings and are counterbalanced by a weight and chain. Stop collars are provided for both extremes of the 5½-in. vertical travel and in addition to this movement there is a vertical adjustment for the head of 9 in. The distance from the column to the center of the spindle is 7⅛ in. and the distance between the spindle centers is 10 in. The machine is furnished with a belt as illustrated, and the tight and loose driving pulleys operate at a speed of 350 r.p.m. The net weight of the machine is 655 lb. and the shipping weight is 45 lb. greater.

Treating the Employee Like a Customer

From an address delivered before the Executive Club, Chicago, by Melville W. Mix, president Dodge Mfg. Company, Mishawaka, Ind., the following notes have been taken:

We talk about "mixing." Has it ever occurred to you that the same glad hand and smile and consideration to our fellow workers may seem more to us and to those receiving them than the same evidence of good fellowship which we may effusively give to a customer, or to some from whom we may expect to benefit through a business transaction? If we seek to influence a business deal with "good mixing," why not go further and give some of it to our associates that we are with every day and who work with us shoulder to shoulder, for better or worse? They want it; they like it. You liked it when you were in their places, and you responded to it or you would not be where you are to-day.

If you worked for a man or firm who didn't give you that cheer and comfort of a certain comradeship, the chances are you quit the job and found a more congenial atmosphere; and under that influence the best that was in you came out, and you delivered the goods you could have delivered to your former employer if he had known how to encourage you.

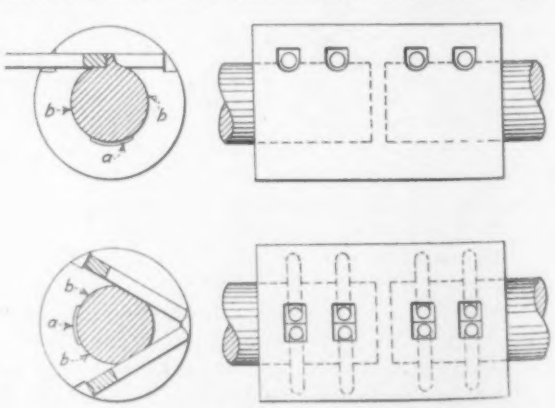
I do not mean to be sentimental in this matter. We often find men who are apparently successful who say there is no sentiment in business; to such, I say "bosh." No vital problems are finally and satisfactorily disposed of that do not contain some consideration of the human element and, as for myself, I prefer not to deal with any conditions or form of organizations—social, political, or commercial—in which the dominating influence is actuated by an arterial circulation of ice water. It doesn't get anywhere. Every one who comes in contact with it gets a chill. Other connections are sought at the first opportunity where the broad human spirit does prevail.

We can nearly always tell the dominating spirit that pervades an organization on the moment we come in contact with any part of it. In the right sort, everybody radiates enthusiasm, good cheer, courtesy, and consideration. There is no greater asset to any business than occupational good-will, yet it is never seen in a financial statement and would probably be blue-penciled if it were stated and appraised, because of its intangibility. Nevertheless, it is one of the most important factors in developing a successful business.

Self-Aligning Safety Shaft Coupling

A shaft coupling for which the special features of safety, self-keying, self-seating, self-fitting and self-alignment are claimed, is being built in two different types by the Thomas Coupling Company, Warren, Pa. They are designed for heavy duty service. In the accompanying drawing, the upper portion represents the coupling for shafts ranging from 1 3/16 to 2 15/16 in. in diameter, while the other coupling shown is intended for shafts of 3 to 6 in. in diameter.

The coupling consists of a hollow cylinder, which is either a steel or iron casting, the ends of the two shafts to be coupled being passed through the opening. A clearance space, *a*, is milled longitudinally through the bore, thus allowing for two bearing faces through the entire length of the coupling. A number of key holes are drilled at right angles to the bore of the coupling and enter a portion of it. Special treated cupped end tool steel pins are forced in these holes to a driving fit by an ordinary hammer. These pins serve to cut away the portion of the shaft which extends above the bed of the pin, an arrangement which it is emphasized locks the shaft both ways and eliminates the machine operation of keyseating the shafting altogether. The clearance space *a* permits the bearing faces *b* to be forced against the shaft with all the power of the



Details of Two Styles of a Self-Keying and Self-Aligning Safety Coupling for Shafting

twist on the shaft against the pins. In this way, it is pointed out, a wedging action is produced that is practically equal to the horsepower being transmitted by the shaft. There is, of course, an absence of set screws, bolt heads, nuts or projections that would be likely to catch belts or clothing.

To Increase Yield of Motor Fuel from Coal

It is well known that in the burning of hydrocarbon gases, or fuels containing hydrocarbons, with oxygen, that the oxygen having a greater affinity for hydrogen than carbon, the hydrogen burns before the carbon; also if an inert gas be present the affinity of oxygen for hydrogen is considerably diminished. Further, when the products of combustion of one of its elements, such as carbon dioxide, are present, the action of the affinity of oxygen for carbon is also reduced.

Acting on this property of inert gases, a large number of experiments have been made on coals containing a high percentage of oxygen, resulting in the production of a large volume of motor spirit, an increased yield of heavy oils and ammonium sulphate and at the same time a hard firm coke. The discussion and the results of such experiments are given by A. Rollason and A. W. Taylor in a paper, "Motor Fuel from Coal" in the Colliery Guardian, England. In these experiments the coal used was crushed below ¼ in. diameter, and to the crushed coal was added a percentage of carbon dioxide contained in finely ground limestone. The addition of limestone to the coal delayed the decomposition of the volatile constituents and the liberation of the gases until the whole of the water contained in the coal had been driven off. The addition of basic substances reduced the volume of water by 41½ gal. per ton and increased the yield of oils by 27½ gal. from practically the same coal. The effect of this treatment is shown in the following results of one of the experiments:

Coal used:	Per cent.
Moisture	4.99
Volatile hydrocarbons	29.78
Fixed carbon, ash, etc.	65.23

Total liquids recovered after water contained in the coal had been driven off:

	Without basic substances,	With basic substances added,
Consisting of—	30 gal.	47 gal.
Water formed	2½ gal.	2 gal.
Motor spirit (0.8 to 0.88)	5½ gal.	19½ gal.
Tar oils	0 gal.	6 gal.
Acids, tar and pitch	22 gal.	19½ gal.
Ammonium sulphate	28 lb.	28 lb.
Coke (poor quality)	65 per cent.	65 per cent.
Gas	6200 cu. ft.	5500 cu. ft.

By this method of treatment, nearly all the oxidized coals, it is held, can be used for production of motor spirit and high class coke or smokeless fuel.

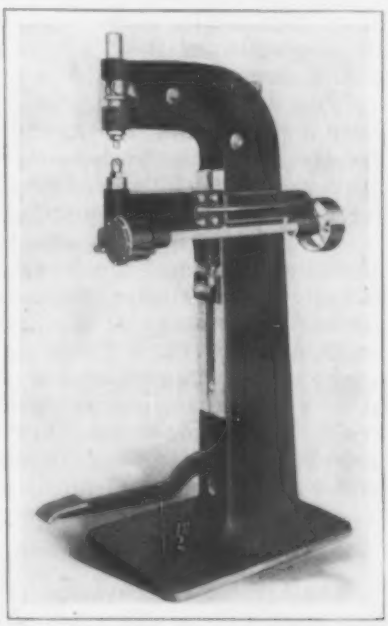
The limestone during the carbonization absorbs heat for its decomposition, and while decomposing, much heat becomes latent in the carbon dioxide evolved. This absorption of heat retards the decomposition of the humus matters in the coal until the contained water is driven off. The temperature now rises until the humus bodies begin to decompose. During their decomposition much water would be formed by the union of the oxygen and hydrogen evolved. The CO_2 gas introduced limits the union of oxygen and hydrogen to form molecules of water, and the union of oxygen and carbon to form carbon dioxide, but it does not prevent or limit the evolution of hydrocarbon vapors from the decomposing humus.

The average yield of motor spirit and heavy oils, ammonium sulphate and fuel from coals raised in the Midlands per ton of coal carbonized was:

Motor spirit, 0.75 sp. gr.	18 gal.
Tar, acids, etc.	22 gal.
Ammonium sulphate	33 lb.
Coke, 60 per cent.	

Interesting Rivet Spinning Machine

The Grant Mfg. & Machine Company, Bridgeport, Conn., has brought out a new type of rivet spinning machine, designed for operating on the inside of circular work, such as the base rings of oil stoves, electric light fixtures and similar articles. The riveting operation is accomplished in a reverse position from that of the company's regular rivet spinning machines, and as indicated in the illustration the riveting rollers are on the underside instead of on top.



A Recently Developed Machine for Spinning Rivets in Which the Riveting Rollers Are Located Underneath the Work Instead of on Top

The riveting spindle is operated by helical gears in an oil tight case. The power is supplied to the machine through a pulley and a shaft at the rear, and provision is made in the countershaft for maintaining a uniform tension on the belt when the table is raised or lowered for work of varying thicknesses.

The Pitot Tube for Gas Measurement

A series of experiments made at the laboratories of the University of Wisconsin to obtain information concerning the reliability of pitot tubes as a means of measuring gases and to determine the accuracy of various forms of the instrument which are in common use were described in a paper which was read by W. C. Rowse, instructor in steam and gas engineering, University of Wisconsin, at the annual meeting of the American Society of Mechanical Engineers. The tubes were compared with a Thomas electric gas meter which was taken as a standard of measurement. To eliminate variation in results due to a wrong method in obtaining the static pressure, simultaneous readings were taken of the velocity heads, as shown by the pitot tube using the pitot static pressure and by the pitot dynamic tube and piezometer. It was found that the pitot tube is a reliable means of measuring gases when the static pressure is obtained in a correct manner and when care is taken in securing the readings, and that very small holes in a perfectly smooth surface give the most accurate results, slots giving erroneous static pressures and beveled-end tubes being unreliable for obtaining static pressures. It was also found that the piezometer was the most reliable means of obtaining the static pressure and is not affected by the form of tube used.

The Bruce-Macbeth Engine Company, Cleveland, Ohio, recently sold two 50-hp. producer gas engines, with a 150-hp. Smith gas producer and one 100-kw. Crocker-Wheeler generator, to the Alberta Financial Brokerage Company, Alberta, Canada.

STEAM FROM WASTE HEAT

Production in German Open-Hearth Furnaces—Theoretical Details and Practical Results

The generation of steam by the waste heat from heating, reverberatory and regenerative furnaces was fully discussed in a paper by Prof. F. Peter, Royal Imperial Mining Academy, Leoben, Austria, before the fall meeting in New York of the American Institute of Mining Engineers, reference to which was made in *The Iron Age* of October 23, 1913. The portion of the paper dealing directly with the production of steam by the waste heat of open-hearth furnaces is herewith presented:

This department of the subject is incomparably more important than the others, because the number and the size of the Siemens-Martin furnaces are so much greater than those of the heating furnaces for rolling mills and hammer forges.

In regenerative furnaces there is already a partial utilization of waste heat for preheating gas and air, but its principal purpose is to raise the combustion temperature in the hearth by raising the temperature of the entering gas and air; the recovery of heat thus effected is not very great, compared with the amount which still escapes unused; and it is therefore worth while to inquire whether a saving of further heat, which would otherwise escape to the chimney, can be effected without injury to the operation of the Martin furnaces.

AMOUNT OF ESCAPING HEAT

The quantity of heat escaping at present, for the most part without hindrance, from these furnaces is very large—about 30 per cent. of the total heat employed (according to Professor Mayer's experiments, 29 per cent.; according to Springorum, 32 per cent. These figures come from well-managed works, so that 30 per cent. as an average is not too high). To these losses, due to the high temperature of the escaping gases, is to be added another, caused by radiation in the furnaces and chambers, which may be estimated at 40 per cent. From these figures we may deduce approximately the economic effectiveness of such furnaces.

The average temperature of the escaping gases of the open-hearth, according to numerous determinations at various works, is about 700 deg. C., or from 200 deg. to 300 deg. below that of the heating-furnace gases considered in the earlier parts of this paper. Hence we have to reckon with a somewhat smaller possible recovery, inasmuch as the transfer of heat through heating surfaces will be smaller. Yet such a recovery is not only practicable, but profitable, because the quantities of gas upon which it is carried out are almost always very large.

Professor Mayer found in his experiments upon heat economy of the Martin furnace that during the production of 1000 kg. of steel 667,000 h. u. escape in the hot waste gases. The investigations of Mackenzie on an entirely different and differently operated furnace gave a loss of 1,000,000 h. u. In both cases the temperature of the waste gases was 700 deg. C.

Of course it would be impossible to recover in any way the whole of this heat. After treatment, the gases would always escape at last at some temperature or other; and, moreover, every transfer of heat involves some loss. To be perfectly safe, and to reach values which can be, with certainty, verified in practice, we shall use the somewhat unfavorable figures given by Mayer. But first we must consider certain characteristic conditions of the Martin process itself, in order to avoid the great mistake of proposing any method which would react injuriously upon that process.

GENERAL REQUIREMENTS TO BE MET

The first requirement is that for a given heating surface the boiler should be as small as practicable, in order, on one hand, to permit its installation where available space is limited, and, on the other hand, to reduce to a minimum the loss through radiation and conduction. Furthermore, the construction and operation of the boiler should be, if possible, such that no interruption for the purpose of cleaning it will be required during the entire furnace campaign of from 250 to 350 days. This requirement can be met by the use of pure water (surface-condenser water), and by such a construction as will permit outside cleaning of the boiler during operation.

The construction should also be such that occasional explosions, occurring when valves are reversed, will not injure the boiler. This condition is fulfilled by making the boiler structure of a large number of single elements, with large open areas between them, so that the pressure from an explosion may pass through without doing harm. Moreover, these single elements must be able to resist occasional gas puffs. For this, as well as the first-named reason, boilers holding a large amount of water are out of the question.

Finally, the boiler, which is placed in the chimney flue of the Martin furnace, must not present too great a resistance to the passage of the waste gases. The reason for this requirement is not alone that the draft might be injured and the chimney might prove inadequate; for the chimney does not play so very important a rôle when artificial draft is at hand. The chief reason is that the pressure from a possible explosion should pass between the single members of the boiler structure without injury to the boiler. The obvious requirements, that the boiler should not require too much attendance and maintenance; that safety of operation should be secured, and that the cost of installation should not be too great—need only be mentioned in passing.

WATER-TUBE BOILER THE BEST

All these requirements together can be met by a boiler, the elements of which are made of water-tubes; for, in the first place, such boilers combine large heating surface with small bulk, and can be operated in a given case with small contents of water; secondly, the outside cleaning of such heating surfaces is easily performed, if necessary, while the boiler is running; thirdly, the third and even the fourth requirement above stated can be satisfied by a suitable arrangement of the tubes; and fourthly and lastly, such heating surfaces are comparatively inexpensive, and, when design and shopwork are good and solid, are highly safe against interior and exterior pressure.

In a boiler for the utilization of the hot chimney gases of Martin furnaces in the production of steam we distinguish the boiler proper, the superheater and the preheater. It is well to place the superheater before the boiler, or at least at the beginning of the draft, and the preheater behind the boiler. In calculating the necessary heating surfaces it seems best to begin with the preheater, then to calculate for the superheater, and to end with the calculation for the boiler. In my book, Die Abhitzkessel, I have given such calculations for a 30-ton Martin furnace, assuming an hourly steam production of 2000 kg. The several heating surfaces were preheater, 125 sq. m.; superheater (250 deg. C. steam temperature), 10 sq. m.; boiler, 200 sq. m.

But since, after utilization, the gases would be so cool that the chimney draft could not overcome the increased resistances, it is self-evident that such utilization is practicable only when natural draft is not relied upon, but the cooled gases are moved by an exhaust fan. This would require in the case named a theoretical expenditure of 6.4 hp. But in view of the comparatively low efficiency of fans of this size I have assumed for safety as required to draw off the chimney gases, 40 hp.—which would represent a fan efficiency of less than 20 per cent.

The calculation of profit from such an installation, costing 36,000 marks, is as follows:

Average steel production per hr.	5,166 kg.
Steam-production from 340 sq. m. aggregate heating-surfaces of attached boiler, in terms of steam at 10 atm. and 250 deg. C.	2,000 kg.
Work of fan per hr.	40 hp.
Cost of plant, including fan	36,000 marks

Assuming the works to contain six furnaces, of which five are constantly in operation, we shall have:

Cost of the boiler-plant		216,000 marks
1. Amortization, 10 per cent., and interest, 5 per cent.	32,400 marks	
2. Attendance and repairs..	7,600 marks	
3. Cost of power, $5 \times 40 =$ 200 hp. at 4 pf. for 1 kw-hr.	50,000 marks	
Total annual costs.		90,000 marks

Since in the five units 10,000 kg. of steam are produced hourly, or 240,000 kg. daily, or, in round numbers, 77,000 metric tons per annum, the cost of this steam is about 1.20 marks per 1000 kg.

LOW COST FOR ELECTRICAL ENERGY

If we now consider the work done with this steam through a steam turbine we find that at the rate (including all losses) of 7 kg. of steam per kw.-hr. the 10,000 kg. produced hourly will generate about 1400 kw.-hr., of which (150 kw.-hr. being deducted for the driving of fans, etc.) 1250 kw.-hr. per hr., or 30,000 per day, or say 9,000,000 per year, remain available, at a cost of 40,000 marks for steam generation and 40,000 for the turbine plant, or 80,000 marks total annual cost. In other words this electrical energy is obtained for less than 1 pfennig per kw.-hr.

No other way of producing electrical energy can show a lower cost. Even water power, favorably located and unfailing in adequate supply, is seldom so cheap, if the amortization of the plant be provided for at about the rate assumed in the foregoing example. It must be noted also that the generation of electric energy in the works—that is, in the place where it is to be used—is independent of the season or weather. A given production of steel gives a corresponding, and (apart from minute variations) almost uniform quantity of energy in this form.

It is praiseworthy to try to make use of the water powers, of which so many are still neglected; but the falls of temperature which occur before our eyes deserve our attention likewise, since they are easier to appropriate, possess more constant strength, do not need long lines of transmission, and can therefore be made available at smaller expense of installation. Moreover, the utilization of these great temperature falls in large steel works recovers enormous quantities of heat otherwise wasted.

PROBABLE COSTS AND PROFITS

Thus far only the theoretical determination of the heating-surface areas and the probable costs and profits have been considered. The records of actual practice with waste-heat boilers attached to Martin furnaces are likewise interesting. In the Duisburg steel works of the Phœnix Company five such boilers were erected last year behind Martin furnaces and put in operation, and thorough tests were made under the direction of the Imperial German Steel Works. From the report of these tests by J. Schreiber, chief engineer, I present here only the average figures of a series of experiments lasting through 20 shifts, upon a boiler erected behind a 50-ton furnace.

Average temperature of boiler feed-water, about	20 deg. C.
Average temperature of gases entering boiler, about	700 deg. C.
Average temperature of gases leaving boiler, about	350 deg. C.
Temperature-fall of gases in boiler, about	350 deg. C.
Average steam-pressure in boiler	7.5 atm.
Consumption of current in operating fan per hr.	57 kw.
Product of steel during experiment	2000 met. tons
Product of steel per hr.	8.3 met. tons
Coal consumption per ton of steel made	234 kg.
Evaporation per sq. m. heating-surface (without preheating)	7 kg.
Steam-production per ton of coal	1842 kg.
Steel-production per ton of coal	449 kg.
Heating-surface of boiler	500 sq. m.

The great economy of such a utilization of waste heat appears very clearly from this statement, especially if it be considered that, even in this first undertaking of the kind, not the least injurious effect of the boiler upon the operation of the furnace was noticeable.

Steel Tool Racks with Seamless Trays

The New Britain Machine Company, New Britain, Conn., has brought out a line of steel tool racks with seamless trays. They are light but stiff and strong. Each tray is pressed from a blanked sheet of No. 16 gauge steel. The tray has rounded internal corners, easy to wipe out, which is important where the work is oily. All rivet holes for corner braces pierce the top edge only, so that the receptacles are oil tight. The racks are furnished in four mountings, namely, quick-facing ball swivel casters, feet, ball-thrust pivot base or in the truck type with one dead X and two ball swivel casters. Both the two-tray and the three-tray types are made in two sizes with trays measuring 20 x 26 and 26 x 32 in. respectively. They are furnished with a drawer if desired.

One of a New Line of Steel Tool Racks with Seamless Trays of No. 16 Gauge Sheet Steel

Course on Industrial Management in Brown University

A course in industrial organization and management is to be established in the second half of the present school year at Brown University, Providence, R. I., by Prof. J. Ansel Brooks, associate professor of mechanics. Professor Brooks has for some time been making a special study of the problems of industrial efficiency and scientific management and he has decided to supplement his own instruction with lectures three or four times a month by business men and managers. These will be open to the public on presentation of cards obtainable from Professor Brooks. The first one, scheduled for 5 p. m., Thursday, February 19, is to be delivered by Dr. Harlow S. Person, director of the Tuck School of Administration and Finance of Dartmouth College.

STEAM BOILER STANDARDS

The Movement to Secure Uniform Legislation on Horizontal Tubular Boilers

The movement to bring about the standardization of tubular boilers through uniform legislation in the various States is being pushed vigorously by the National Committee on Uniform Standard Specifications composed of manufacturers of horizontal tubular boilers. Through Thomas E. Durban, vice-chairman of the committee and general manager of the Erie City Iron Works, Erie, Pa., the question is being brought before State boards organized to take up matters of this kind and before the heads of State departments already having laws covering the subject. It will be recalled that Mr. Durban read a paper on the subject before the American Boiler Manufacturers' Association, in Cleveland, in September, 1913, this paper being printed at length in *The Iron Age* of September 11, 1913.

The committee met in Pittsburgh October 30 and 31 and showed, as the appended list will indicate, a representation from almost all localities where there is a law. Recommendations were made, as listed below, absolutely unanimous, so that it is justifiable to assume that the recommendation constitutes the best judgment of the men who manufacture boilers, of men who insure and inspect boilers and of the executive heads of industrial commissions and boiler rules commissions. The recommendations are as follows:

1. Factor of safety of five.
2. Fusible plugs in all boilers.
3. All rivet holes to be reamed. Plates up to and including 5/16 in. to be reamed ⅛ in. From 5/16 in. to ⅝ in. inclusive, ¼ in. Above ⅝ in. drilled from the solid.
4. Tube holes to be cut from the solid, or punched ½ in. small, and reamed to size.
5. The pitch of diagonal braces to be the pitch of staybolts, plus 2 in. to be the allowable pitch for diagonal braces in a boiler. Pitch to be taken from center to center of rivets.
6. Through rods to be pitched the same as diagonal braces.
7. When boiler has a manhole, the front head or rear head can be braced with crow-foot braces, and can be triangular if properly distributed, but the bridge type of brace for rear head is preferred.
8. Longitudinal seams of shell to be butt strapped in all cases except boilers under 36 in. in diameter, not exceeding 100 lb. working pressure. Thickness of butt straps as recommended by Massachusetts Board of Boiler Rules.
9. Manholes and Handholes: Boilers 40 in. in diameter shall have a manhole above the tubes. Boilers above 48 in. diameter, below the tubes. Boilers 48 in. and larger in diameter shall have two manholes, one above, and one below the tubes. All boilers that do not have a manhole shall have a handhole in the front head.
10. Perforated dry pipes to be prohibited. The slotted or channel dry pipe to take its place.
11. Boilers above 72 in. in diameter shall have gallows frame suspension; 72 in. diameter and less shall be supported by brackets.
12. Internal feed pipes as per Massachusetts laws.
13. All plates to be bevelled on a regular plate planer where possible, and no process to be used in bevelling plate that causes distortion at the edge.
14. Inspectors to be authorized to replace obliterated stamps.
15. Blow-off tanks to be made of boiler plate to stand boiler pressure with two flanges for inlet and outlet. Outlet to be equivalent to twice the diameter of the blow-off inlet.
16. Fitting of butt straps per Massachusetts law.
17. Minimum size of water column pipe, 1½ in.

In regard to the stamping of the plates, a conference is to be held between plate makers and the committee. It is desired that plates be stamped, giving the tensile strength developed on test and not the minimum, and that the heat number and the specimen number be given and that a record of the tests of both the chemical and physical properties be provided by the mills, and a certificate of such tests and analysis be provided the State inspector and the customer, and a record of this be kept, together with the specimen number of the boiler at the factory where the boiler is made, so that at any time by giving the number, a certified copy of such tests could be furnished.

Those participating in the committee meeting in Pittsburgh are as follows:

John C. McCabe, chief inspector of boilers, Detroit.
John M. Lukens, chief inspector of boilers, Philadelphia.
R. B. Wilcox, chief inspector of boilers, Chicago.
J. J. Graham, manager Hartford Insurance Company, Pittsburgh.
H. A. Baumhart, representing Ohio Board of Boiler Rules, Century Building, Cleveland.
R. M. Pennock, Department of Labor and Industry, Harrisburg, Pa.
I. E. Jones, secretary and general sales manager, Brownell Company, Dayton, Ohio.
W. M. Taylor, president Chandler & Taylor Company, Indianapolis, Ind.
Robert Joy, Kingsford Foundry & Machine Works, Oswego, N. Y.
C. Ferrari, mechanical engineer, Erie City Iron Works, Erie, Pa.
Theo. O. Vilter, president Vilter Mfg. Company, Milwaukee, Wis.
William Murray, chief boiler inspector, Seattle, Wash.
C. V. Kellogg, president National Association Tubular Boiler Manufacturers, Chicago.
Charles S. Hooper, secretary Union Iron Works, Erie, Pa.
J. D. Farasey, representing Teachout Boiler Works, and secretary Boiler Manufacturer's Association, Cleveland.
L. E. Connelley, president D. Connelley Boiler Company, Cleveland.
George A. Luck, representing Commonwealth of Massachusetts, State House, Boston.
C. H. Wirmel, chief inspector of boilers, State House, Columbus, Ohio.
M. F. Moore, assistant to president, Kewanee Boiler Company, Kewanee, Ill.
T. E. Durban, general manager Erie City Iron Works, Erie, Pa.
J. D. Beck, industrial commission of Wisconsin, Madison, Wis.
T. J. Scanlon, inspector Pittsburgh inspection division, Maryland Casualty Company, Pittsburgh.
Henry Wilkinson, engineer, Travelers' Indemnity Company, Hartford, Conn.
George N. Riley, National Tube Company, Pittsburgh.
D. L. McLean, inspector Travelers' Insurance Company, Commonwealth Building, Pittsburgh.

Cooper Gas Engine Sales

The Federal Glass Company, Columbus, Ohio, has bought from the C. & G. Cooper Company, Mt. Vernon, Ohio, a heavy duty gas-engine-driven air compressing unit. The engine is of the horizontal single tandem double-acting type, having cylinders 19-in. bore, 24-in. stroke, and rated at 310 b.h.p. The air cylinder, which is of the Ingersoll-Rand Company's make, Hurricane type, is directly coupled to the engine on the front end of the bed plate. It is 26¼ in. in diameter, with a capacity of 2100 cu. ft. of air per minute. This installation is a notable one, marking a preference for the direct-coupled type of gas engine and air compressor over the belted type.

The Cooper Company has also sold to the Charles Boldt Company, Cincinnati, for its new plant at Huntington, W. Va., two 550 b.h.p. gas engines, each to be direct connected to a 350-kw. generator.

The future of the development of the fire pump is touched on by Ezra E. Clark, engineer and inspector of the Factory Mutual Fire Insurance Companies, Boston, in a paper read before the American Society of Mechanical Engineers in December. It is not at all unlikely, he suggested, that the steam turbine centrifugal will gradually displace the duplex pump, as its design becomes simplified and standardized, and its cost lowered. Where steam is not available, the electric-driven centrifugal, or the gasolene-driven rotary, will be found, and as fast as its development permits the gas-turbine-driven centrifugal will possibly win recognition and receive adoption.

TIN PLATE PRACTICE COMPARED

Output and Methods in Russia, Germany and the United States

Visits were made to Russia, Germany and the United States in the fall of 1913 by representatives of the British Steel Smelters, Mill, Iron, Tin Plate and Kindred Trades Association to study working conditions in the tin plate industries in these countries. The results were embodied in a pamphlet published by the association. Tom Griffiths, the organizing secretary, visited Germany and Russia, and Sidney Jones, president of the executive committee, made the inspection in the United States. Some of the conclusions are given as follows in the Ironmonger for December 27, 1913:

Mr. Griffiths states that the Welsh tin plate workers who settled in Moscow have become adjusted to the conditions and appear to be in comparatively easy circumstances. They earn good money and reside in houses which have been built within the walls of the works. He says the Germans turn out from 60 to 70 boxes per 8 hr. when everything goes well in the mill, but the general average for a period would be about 42 boxes per shift. This does not come up to the Welsh average, and cannot touch the Russian output under similar conditions, though in Germany there are two men fewer in the mill. The Russian output may be as high as from 110 boxes to 130 boxes per 8 hr. Perhaps a fair average would be from 95 to 100 boxes in eight hours. He saw 107 boxes of 80 lb. made on a Monday morning after the rolls had been warmed by two heats of 24 gauge. The output on one cross 28 x 20 two lengths would be from 55 to 60 boxes per 8 hr. This output looks so large as to be hardly credible, but with the facilities and number of workmen in the mill it is accomplished. Comparing these results with Welsh practice Mr. Griffiths puts the figures on special occasions at from 60 to 70 boxes of light plates, 28 x 20 and 30 x 21. But if an average output on all orders in Welsh mills were taken it would be found that about 45 boxes per 8 hr. is not far from the mark. That would be done by four men, whereas there were seven men in Russia.

Mr. Griffiths thinks the Welsh have nothing to learn from the Germans, and had it not been for the high duty placed on Welsh tin plates the Germans could not compete. The orders taken in Germany are generally favored Government orders. There is a japanning works about a quarter of a mile from the Rasselstein works that uses all Welsh tin plates. Some Welsh employers, however, might learn a lesson from the Germans about pushing their business, and so become as enterprising as the Germans are. It is surprising to find to what extent the tin-house departments have developed in Russia. This is on account of the high duty charged on the plate tinned in Great Britain. The uses to which tin plates are put are wonderful.

Mr. Jones expresses disappointment on finding that the iron, steel and tin plate workers at Pittsburgh are in a bad state of disorganization. He was unable to get into some of the works he hoped to visit. He was impressed with the American method of working. Although they work a little brisker when they are at it, they have so many spells in between that the work is not nearly so hard as it is in Wales. They have only one pair of rolls, and in nearly all the works 28 men are employed to the mill against 13 in Great Britain. Mr. Jones finds it difficult to give accurate figures as to the make, because output is based on an entirely different system from that practiced in South Wales; the men are paid by the gauge and pound. Mr. Davies, assistant secretary to the union, worked out the figures in the few works they control, and where they have a limit, as 110 boxes per shift, but elsewhere the figures indicated 130 boxes per shift.

Cleveland Foundrymen's Association

William H. Barr, president National Founders' Association and general manager Lumen Bearing Company, Buffalo, N. Y., was the guest of the Cleveland Foundrymen's Association at a banquet given at the Cleveland Athletic Club, January 21, to which all the foundrymen of the city were invited. H. J. Boggis, Taylor & Boggis Company, acted as toastmaster. Mr. Barr, who delivered the principal address, referred to various legislative measures both in Washington and elsewhere that he declared were dangerous to the business of the country, many of these being drafted in the interests of labor organizations. He referred to the Bacon-Bartlett anti-trust injunction bill as the worst measure now under consideration in Washington, and condemned the La Follette seamen's bill. He urged employers to give their attention to their independent employees and suggested the establishment of clubs that would take the place of union headquarters, and that accident and life insurance be provided for their men. He laid particular stress on the necessity of installing safety devices and safety equipment in factories. Employers, he declared, must instill in the public mind that independent labor is honorable, profitable, enjoyable and fundamentally right.

Thomas D. West, West Steel Castings Company, spoke on the movement he has inaugurated to eliminate drinking by employees during working hours. In this connection Mr. West presented the following resolution, which was unanimously adopted:

> Whereas, The drinking of intoxicants by employees during working hours increases the number of accidents and is detrimental to the welfare and the safe being of the employee and detracts from his rendering more efficient service,
>
> We, the foundrymen of Cleveland and vicinity, in order to aid in the prevention of accidents and thereby minimize their number, hereby request the Legislature in our State to enact such laws as will instruct the Liquor License Commissioners of the State of Ohio and all the respective counties in the State to refuse to issue licenses for the conducting of a saloon within 500 ft. of any manufacturing plant or foundry.

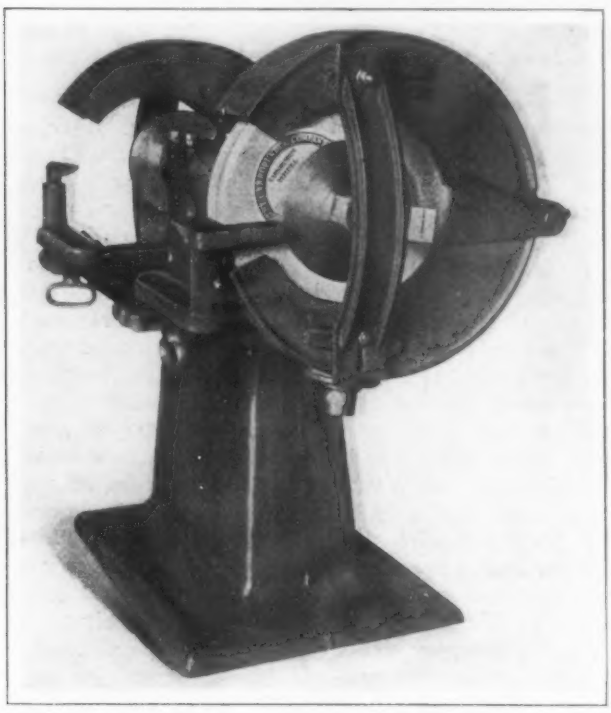
Mr. West states that the aim of his committee is a 600-ft. limit and that this will be called for in further resolutions offered by it.

In connection with the subject of drinking by employees, Mr. Barr brought out some interesting information as to how this evil has, to a large extent, been eliminated in the plant of the Lumen Bearing Company. He stated that he placed a small refrigerator in the plant and asked one of his trusted employees to drink milk instead of beer during the noon luncheon. For a time this workman was scoffed at by his fellow employees, but Mr. Barr said that an inspection of the refrigerator, which he made recently, disclosed 47 bottles of milk that had been placed there for that number of workmen, who had adopted the milk-drinking habit. He also stated that the extent of drinking in the shop had been further reduced by allowing the sale of candy and tobacco in the plant during the noon hour.

Other speakers were W. D. Sayle, Cleveland Punch & Shear Works Company; C. B. Wilson, Ferro Machine & Foundry Company; Ben Fuller, Westinghouse Electric & Mfg. Company; J. J. Beever, Otis Steel Company, and George Smart, Iron Trade Review.

Adjustable Hood for Grinding Wheels

The Valley City Machine Works, Grand Rapids, Mich., has recently added a new adjustable protection hood to its line of grinding machines. This



A New Adjustable Hood for Protecting the Operator of a Grinding Machine from Injury Due to a Breaking Wheel

hood can be applied to any make of emery wheel stand, and it is pointed out will afford protection to the smallest diameter wheels it is practicable to use and also protects the nut on the arbor. The guard is made in sizes to take care of wheels ranging from 8 to 24 in. in diameter and in the accompanying engraving the hood of the largest size is shown adjusted to fit over a wheel 18 in. in diameter. It will be noticed that the wheel is completely protected, and at the same time the hood has been adjusted so as to enable the operator to reach the face of the wheel.

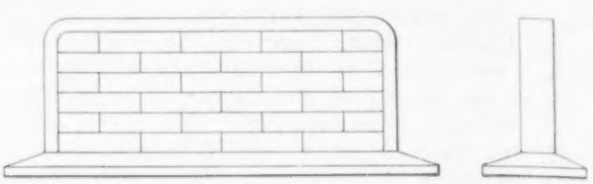
Notable Performance of Coal Mine Locomotive

Enough coal was recently gathered and hauled in 9¾ hours by an 8-ton electric mine locomotive at one of the mines of the Scalp Level Coal Mining Company to fill 18 100,000-lb. steel railroad cars. This locomotive, which is one of a line jointly developed by the Baldwin and Westinghouse companies, made 36 trips hauling 12 cars, each loaded with 2 tons of coal per trip. The longest haul was about 2500 ft. and at two points a 1½ per cent. grade 400 ft. long against the load had to be overcome. With the exception of a few cars, hauled from a dip in the heading by a mule, the locomotive did all the work of gathering the coal cars and hauling them to the tipple. It is stated that no effort was made to establish a record, and in fact at least 2 min. were lost on each trip because of the motorman waiting for empty cars, but it is believed that by making a special effort, it will be possible to gather and haul sufficient coal to load at least 24 of these railroad cars in a working day.

E. L. Ryerson and Clyde M. Carr recently tendered a dinner to the members of the sales organization of Joseph T. Ryerson & Son in Chicago at the close of their annual sales convention. Ninety-eight men sat down to dinner and afterward listened with interest to the guest of the evening, Dr. R. A. White, who gave an illustrated lecture on his recent trip to the Panama Canal zone.

A Baffle for Oil Annealing Furnaces

After much trouble in building baffle walls in front of the oil burners of annealing furnaces, only to have them knocked down by the crane operators handling the pieces put into the furnaces, a baffle similar to the one illustrated has been used with satisfaction, according to Sidney K. Eastwood, 5105 Springfield avenue, Philadelphia. The baffle consists essentially of a wall of firebrick in a cast-iron frame with a broad base. In lining the frame the two bricks in the upper corners are left out. This serves the double purpose of giving a chance to handle the baffles with a crane and to make it an easy matter to put the firebrick in place. The



A Baffle for an Annealing Furnace Using Oil Fuel Which Is Capable of Withstanding Hard Usage

life of the baffle is limited only by the wearing qualities of the firebrick, it is emphasized, as it cannot be damaged by pieces of steel striking against it, and the heat from the burners does not impinge upon the cast-iron frame sufficiently to produce warping.

Tests of Manganese Vanadium Steel

Service tests of a shear knife made of a new type of vanadium steel were recently made by the Carnegie Steel Company, Pittsburgh, in which the results obtained are so remarkable as to indicate that the steel in question promises to be an important development. This steel was a special high-carbon high-manganese vanadium steel of the following chemical composition:

Carbon	0.72	Silicon	0.124
Manganese	1.48	Phosphorus	0.027
Vanadium	0.19	Sulphur	0.030

The knife was 7½ in. wide, 2⅝ in. thick and 131 in. long. It was heat-treated in such a manner as to give a scleroscope hardness of 80 on the cutting edges and 50 to 55 in the body of the blade which was protected. The knife was installed as the bottom blade in shears in the armor-plate department at the Homestead works of the Carnegie Steel Company on November 14, 1913. It remained in continuous service, with only one of the four edges of the blade being used, until December 16, when it was taken out on account of fracture. During this time it cut 800 tons of scrap.

Owing to the numerous cuts made in shearing scrap, a blade in this service is considered as doing 300 per cent. more work for a given number of tons cut than when doing ordinary shearing. In comparison, the average life of a blade, where all four edges are used, is 15 days when doing ordinary shearing, during which time it cuts about 150 tons of material. This gives an average of about 37½ tons per cutting edge as compared with 800 tons, the record of the high-manganese vanadium steel blade. This latter service is the highest on record in the armor-plate department of the Homestead works.

The Ohio Ceramic Engineering Company, Cleveland, Ohio, has changed its name to the Lakewood Engineering Company.

THE STEEL CORPORATION SUIT

Hearings in the West—Testimony Taken at St. Louis and Chicago

The report of hearings in the suit for the dissolution of the United States Steel Corporation printed in *The Iron Age* of last week included the testimony presented at St. Louis on Monday, January 19. The sitting of the special examiner in that city closed on Tuesday. Following is a summary of other testimony presented at St. Louis:

COMPETITIVE CONDITIONS SHOWN AT ST. LOUIS

Thomas R. Akin, president Laclede Steel Company, testified that his company was one of perhaps a dozen engaged in the manufacture of steel products from old steel rails. He said it was not in any combination to fix or control prices. Most of its output is marketed in St. Louis, and he had met only legitimate competition so far as he was able to determine.

Alexander B. Pierce, vice-president N. O. Nelson Mfg. Company, maker of plumbers' supplies, etc., testified that his company bought steel pipe from four or five different makers, about half coming from the National Tube Company. His opinion was that there was reasonably open competition as far as he could see from his purchases. He added that some of the concerns from which his company bought gave a 5 per cent. preferential and some in addition gave from 2 to 5 per cent. discount. His company at times paid a higher price for pipe to the Steel Corporation than that charged by independents, but this was usually due to better service from the larger concern and often because of a customer's demand. He said, in answer to a question, that the subsidiary companies of the Steel Corporation generally allowed a preferential and a discount of from 2 to 5 per cent.

W. A. Layman, president Wagner Electric Mfg. Company, testified that his company bought 90 per cent. of its steel from the Steel Corporation in 1913. He was of the opinion that this was more due to better quality and better service than anything else, and he was also of the impression that the existence of competition was a real factor, at least as far as he could determine from his company's operations.

Wilbur E. Crane, president Illinois Steel Bridge Company, said that his company bought about 75 per cent. of its steel from the Steel Corporation, the preponderance of his business going in that direction because of quality and service which the larger corporation gave in connection with the transactions entered into. The other 25 per cent. went to independents who were able to meet his requirements in a satisfactory manner.

Alfred R. Baldwin, wholesale hardware dealer, Springfield, Mo., stated that he bought from manufacturers who competed with one another and prices and qualities for the most part governed his purchases.

J. A. Partridge, president American Bed Company, said that much of his buying was from the American Steel & Wire Company, and that this subsidiary of the Steel Corporation was able to give quality and service which made it dominant. There was competition on the part of the independents, but they, however, were not always prepared to give the service which the larger corporation could render.

The hearing in Chicago opened on Wednesday, January 21.

PACIFIC COAST WITNESSES AT CHICAGO

At Chicago, on Thursday, January 22, witnesses called for the defense were various representatives of Pacific coast iron and steel interests, who testified regarding their purchases.

J. O. Rhoades, purchasing agent for the Southern Pacific Railroad, stated that his company bought only 10 per cent. of its steel, excluding rails and bridges, from Steel Corporation subsidiaries. Few track supplies are purchased by it from Steel Corporation mills, these needs being mostly filled by products of the Colorado Fuel & Iron Company.

J. R. Bowles, president of the Northwest Steel Company, Portland, Ore., testified his company has a fabricating plant of 10,000 tons annual capacity at Portland and another of equal capacity at Vancouver, B. C. Previous to 1910 he had bought practically all his bars, plates and shapes from Europe; but since 1910 he has been able to get better prices from American producers and has purchased the larger part of his requirements in the domestic market. He said American producers are actively competing with one another for Pacific coast business. He also testified that he found American steel is much superior in quality to the foreign product.

Ralph W. Kinney, of the R. W. Kinney Company, plumbers' supplies, San Francisco, testified that he purchases pipe under competitive conditions, both from subsidiaries of the Steel Corporation and from independents.

On Friday William Piggott, of Seattle, president of the Seattle Car & Foundry Company, and vice-president of the Pacific Coast Steel Company, testified that he always found active competition on the Pacific coast between the Steel Corporation subsidiaries and independent steel makers.

The hearings on Monday and Tuesday of this week failed to develop testimony along any new lines. H. G. Copp, general purchasing agent for Deere & Co.; Louis Kuehn, president Milwaukee Corrugating Company; Anson Mark, Mark Manufacturing Company, and George A. Oliver, president Oliver Plow Works, were asked concerning the tonnage, character and distribution of their steel purchases during the last few years, developing the facts that the business was placed with the Steel Corporation as well as independents on the most favorable price and delivery. Testimony concerning the influence of the absorption of the Tennessee Coal, Iron & Railroad Company upon the financial situation in 1907 was obtained from John G. Shedd, president Marshall Field & Co. and director in several banks, and from George M. Reynolds and John J. Mitchell, presidents respectively of the Continental & Commercial National Bank and the Illinois Savings & Trust Company.

The Northwest Steel Company is building a fabricating shop in South Portland, Ore., which is expected to be ready for operation about April. The main building will be 65 x 580 ft. and will be served by two overhead traveling cranes running its full length and extending beyond on an outdoor runway 100 ft. to a siding of the Southern Pacific Railroad. In addition, a number of swinging jib and wall cranes will be installed for the purpose of serving the machines in the building. The templet shop will be 50 x 150 ft., two stories, the lower story being used as a storage shed. The machine shop will be 50 x 100 ft., and will contain in addition to the usual equipment the air compressors to be used in operating the riveting machines. The smith shop will be 50 x 100 ft. It is expected that the monthly output of the plant will be about 1500 tons.

ESTABLISHED 1855

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The Administration and Business

The hopeful temperament of Americans has never been more clearly demonstrated than in the great improvement in business which followed President Wilson's message to Congress on Tuesday, January 20. The spirit of the President's deliverance was so apparently conciliatory and so distinctly different from the attitude taken by national authorities for several years that it was immediately taken to indicate that a new era in the relations of the National Government with business interests had dawned. In the course of his remarks, the President said:

> The antagonism between business and government is over. We are now about to give expression to the best business judgment of America, to what we know to be the business conscience and honor of the land. The Government and business men are ready to meet each other half way in a common effort to square business methods with both party opinion and the law.
>
> It will be understood that our object is not to unsettle business or anywhere seriously to break its established courses athwart. On the contrary, we desire the laws we are now about to pass to be the bulwarks and safeguards of industry against the forces that have disturbed it. What we have to do can be done in a new spirit, in thoughtful moderation, without revolution of any untoward kind.

As to the legislation contemplated, said President Wilson, "It will be a comprehensive but not a radical or unacceptable programme." Nothing in the message, however, indicated that the Administration proposes to recede from its attitude toward such actions of business men and industrial corporations as appear to be in violation of the laws of the country. He made it clear that it would be the purpose of the majority in Congress to pass laws which will effectually prohibit and prevent such interlockings of the personnel of the directorates of great corporations as in effect result in making those who "affect to compete in fact partners and masters of some whole field of business." He also stated that a further and more explicit legislative definition of the policy and meaning of the existing anti-trust law would be attempted. Speaking of a proposition to form an Interstate Trade Commission, he explained that it would be "an instrumentality for doing justice to business where the processes of the courts or the natural forces of correction outside the courts are inadequate to adjust the remedy to the wrong in a way that will meet all the equities and circumstances of the case."

As an example of the work of such a commission, the President stated that producing industries which have passed the points up to which combination may be consistent with the public interest and the freedom of trade, cannot always be dissected into their component units as readily as railroad companies or similar organizations can be. "Their dissolution by ordinary legal process may oftentimes involve financial consequences likely to overwhelm the security market and bring upon it breakdown and confusion. There ought to be an administrative commission capable of directing and shaping such corrective processes, not only in aid of the courts, but also by independent suggestion, if necessary." He held that as every act of business is done at the command or upon the initiative of some ascertainable person or group of persons "these should be held individually responsible and the punishment should fall upon them, not upon the business organization of which they make illegal use."

The deliverance of the message was shortly afterward followed by the introduction in the House of Representatives of four bills which are understood to have the indorsement of the President. These comprise a bill for the formation of an Interstate Trade Commission; a bill to prohibit interlocking directorates; a bill defining the Sherman anti-trust law, and a trade relations bill.

The bill for the establishment of the Interstate Trade Commission proposes that it shall be composed of five members, of whom not more than three shall be members of the same political party, that it shall absorb the Bureau of Corporations and have the power of subpoena in making its inquiries. The bill clothes the commission with considerable power, but does not give it the authority to institute proceedings against any corporation. The interlocking directorates bill provides a penalty to take effect two years after its approval. The bill defining the Sherman anti-trust act proposes to make it unlawful to create or carry out restrictions in trade or to acquire a monopoly in any interstate trade, business or commerce; to limit or reduce the production or increase the price of merchandise or of any commodity; to prevent competition in manufacturing, making, transporting, selling or purchasing of merchandise, produce or any commodity; to make any agreement, enter into any arrangement, or arrive at any understanding by which makers, directly or indirectly, undertake to prevent a free and unrestricted competition among themselves or among any purchasers or consumers in the sale, production or transportation of any product, article or commodity. This bill provides that any person, firm or corporation violating any of its provisions shall, upon conviction, be pun-

ished by a fine not exceeding $5000 or imprisonment not exceeding one year, or by both, in the discretion of the court. The trade relations bill supplements the Sherman anti-trust act by prohibiting price regulation and also by providing that any person, firm, corporation or association shall be entitled to sue for and have injunctive relief in any court of the United States having jurisdiction over the parties against threatened loss or damage by a violation of the act.

It will thus be seen that while the President indulged in mild language, with admirable freedom from denunciation, he and his advisers have no intention of receding from the position taken by national authorities in recent years against the pursuit of large business interests. These interests will be under even closer surveillance than heretofore, as the Interstate Trade Commission will have the power of examining the books, papers or documents of corporations doing an interstate business, including records of any of their executive or other committees, as the bill reads, and "the information so obtained shall be public records." It would seem that if the bill should pass giving such extraordinary powers to the commission the methods of doing business will be given such publicity as to hamper greatly the conduct of certain kinds of business.

As a fair hearing is to be given before these bills are put upon their passage, it is possible that some of their most objectionable provisions may be considerably modified. If, however, all protests are disregarded and the bills are pressed to passage in the form in which they have been introduced, we will simply have another illustration of those professed friends

> That keep the word of promise to our ear
> And break it to our hope.

For the present, stock market agencies and business men generally have taken fresh heart and show by their actions that they are hopeful that a new era has actually dawned. They seem to be willing to take the President at his word when he concluded his message as follows: "We are now about to write the additional articles of our constitution of peace, the peace that is honor and freedom and prosperity."

The Efficient Use of Equipment

The development of mechanical appliances in industry was never more rapid than that of foundry equipment in the past few years. Through various educational agencies the foundryman was brought to see the need for abandoning "rule of thumb" and supplanting hand labor with power equipment if foundry practice was to keep pace with other branches of industry. The use of mechanical appliances was so long delayed that even the earlier and simpler forms worked such reductions in costs and improvements in practice that the foundryman became an enthusiast. Under the stimulus of this enthusiasm, foundry equipment has been produced in the most diversified forms. Indeed, a situation has come about in which it may almost be said that foundries are being designed in the belief that success depends upon having the maximum amount of equipment. In consequence, many foundries today are over-equipped.

This is not a reflection upon the equipment nor upon its value. It does bring in question the judgment of many a foundryman who, educated to the point of demanding improvements in his trade, has not acquired the equally necessary knowledge of the efficient use of such improvements. There is in every plant a certain balance between tonnage, the human factor and the plant equipment. Economical operation depends upon maintaining that balance. Too much equipment for tonnage handled is costly. So is too little equipment. And it is equally extravagant to install equipment capable of handling tonnage more rapidly than the human element can possibly perform its necessary functions. A foundry in a middle Western State is a case in point. Equipped for continuous pouring in a manner that reduces human operations to a minimum, this plant, representing the last word in specialized equipment, is so unbalanced that its cost of production is greater by several dollars a ton than that of the same product in the old-fashioned foundry that was its predecessor.

Foundrymen are beginning to recognize that they have much to learn on this subject. At the joint meeting of the Allied Foundry Associations held in Chicago, January 17, no problem was more seriously discussed. It may be expected, therefore, that the deliberations of these organizations and the papers presented at their meetings will increasingly deal with the more efficient use of the advanced equipment now available.

The New York Compensation Act

The workmen's compensation act which recently went into effect in New York State promises to be a very serious matter for owners of industrial and other establishments where men and women are employed. The cost of the insurance against liability for accident which must be carried by owners will be considerably more than in most of the other States. As compared with the Connecticut and Massachusetts acts, the increased expense will be at least 33 per cent.—it may be 50 per cent.

The act gives no alternative. The employer must accept workman's compensation. In most of the States the option remains between compensation and employer's liability. This is necessary under the various constitutions. The absence of such a provision led to the decision against the constitutionality of the original New York statute, but a constitutional amendment made it possible to omit it in the new law. The scope of the act in respect to the amount of damages which must be paid in case of accident is indicated by the following extracts:

> In case of total disability adjudged to be permanent 66 2/3 per cent. of the average weekly wages shall be paid to the employee during the continuance of such total disability. Loss of both hands, or both arms, or both feet, or both legs, or both eyes, or of any two thereof shall, in the absence of conclusive proof to the contrary, constitute permanent total disability. In all other cases permanent total disability shall be determined in accordance with the facts.
>
> In case of temporary total disability, 66 2/3 per cent. of the average weekly wages shall be paid to the employee during the continuance thereof, but not in excess of $3500.
>
> In case of disability partial in character but permanent in quality the compensation shall be 66 2/3 per cent. of the

average weekly wages and shall be paid to the employee for the period named in the schedule as follows:

For the loss of a thumb, 60 weeks.

For the loss of a first finger, commonly called index finger, 46 weeks.

For the loss of a second finger, 30 weeks.

For the loss of a third finger, 25 weeks.

For the loss of a fourth finger, commonly called the little finger, 15 weeks.

The loss of the first phalange of the thumb or finger shall be considered to be equal to the loss of one-half of such thumb or finger, and compensation shall be one-half of the amount above specified. The loss of more than one phalange shall be considered as the loss of the entire thumb or finger; provided, however, that in no case shall the amount received for more than one finger exceed the amount provided in this schedule for the loss of a hand.

For the loss of a great toe, 38 weeks.

For the loss of one of the toes other than the great toe, 16 weeks.

The loss of the first phalange of any toe shall be considered to be equal to the loss of one-half of said toe, and the compensation shall be one-half of the amount specified. The loss of more than one phalange shall be considered as the loss of the entire toe.

The loss of a hand, 244 weeks.

For the loss of an arm, 312 weeks.

For the loss of a foot, 205 weeks.

For the loss of a leg, 288 weeks.

For the loss of an eye, 128 weeks.

In case of temporary partial disability, except the particular cases already mentioned, an injured employee shall receive 66 2/3 per cent. of the difference between his average weekly wages and his wage-earning capacity thereafter, during the continuance of such disability, not in excess of $3500. If the injury causes death the compensation is on the basis of 66 2/3 per cent.

It will be noted that not only is the percentage increased from the ordinary 50 per cent. to 66 2/3 per cent., but the period over which compensation shall extend averages considerably greater than in other States.

One feature of the New York act, relating to associations for accident prevention, is something quite new in compensation and is receiving much favorable comment. We quote:

The employers in any of the groups described in section two or established by the commission may with the approval of the commission form themselves into an association for accident prevention, and may make rules for that purpose. If the commission is of the opinion that an association so formed sufficiently represents the employers in such group, it may approve such rules, and when so approved and approved by the industrial board of the labor department they shall be binding on all employers in such group. If such an approved association appoint an inspector or expert for the purpose of accident prevention, the commission may at its discretion provide in whole or in part for the payment of the remuneration and expenses of such inspector or expert, such payment to be charged in the accounting to such group. Every such approved association may make recommendations to the commission concerning the fixing of premiums for classes of hazards, and for individual risks within such group.

The act divides employment into well-defined groups, for example:

Group 21. Iron, steel or metal foundries; rolling mills; manufacture of castings, forgings, heavy engines, locomotives, machinery, safes, anchors, cables, rails, shafting, wires, tubing, pipes, sheet metal, boilers, furnaces, stoves, structural steel, iron or metal.

Group 22. Operation and repair of stationary engines and boilers, not included in other groups.

Group 23. Manufacture of small castings or forgings, metal wares, instruments, utensils and articles, hardware, nails, wire goods, screens, bolts, metal beds, sanitary, water, gas or electric fixtures, light machines, typewriters, cash registers, adding machines, carriage mountings, bicycles, metal toys, tools, cutlery, instruments, photographic cameras and supplies, sheet metal products, buttons.

Group 24. Manufacture of agricultural implements, threshing machines, traction engines, wagons, carriages, sleighs, vehicles, automobiles, motor trucks, toy wagons, sleighs or baby carriages.

Under a general section the act provides for the establishment of mutual insurance companies. In conjunction with these, and even in conjunction with the established indemnity companies, associations for accident prevention present a broad opportunity for good work. It is left to the judgment of the commission whether petitioners for the establishment of an association properly represent the industry. For illustration, we will assume that 15 or 20 representative houses, all included in group 23, decided that the effort to procure accident prevention be carried forward on a much more elaborate scale. The commission must decide whether such action would serve the best interest of the industries as a whole. It might well happen that the compulsory adoption of the entire outfit of proposed safety devices would in some cases prove a serious burden to small manufacturers, while accomplishing great good in larger establishments. The working out of this feature of the act will be followed with interest for its suggestions to other States.

The resignation of Dr. Richard Moldenke as secretary of the American Foundrymen's Association leaves a void in that organization which is not likely to be filled. For many years to a very large degree Dr. Moldenke has been the organization. When he became secretary he found little more than a loose machinery for bringing a certain number of foundrymen together on an annual junket, with the incidental reading of a few papers on foundry practice. He has built it into a strong organization with over 700 members and producing a literature requiring a stout volume for its proceedings. He has put his talents at the disposal of the membership without stint and has aided in the solution of foundry problems both of individuals and of the industry as a whole to an extent beyond calculation. He has made the association influential at home and throughout the foundry world of Europe. We do not overlook the particulars in which the work of the American Foundrymen's Association must be differentiated from that of the engineering societies; but the very shortcomings of the foundry industry, that for many years made it so little amenable to scientific treatment, add to the credit Dr. Moldenke must have for so greatly advancing it.

Correspondence

Scrap Iron Associations

To the Editor:—There are in the United States over 1000 firms conducting scrap iron yards. The smallest of them do a business averaging about 15 tons a day, but the larger yard dealers and brokers, of which there are at least 300, turn over an average of 50 to 200 tons a day. Authentic data showing the total tonnage of scrap iron handled a year and the amount of money this commodity runs into would astonish the commercial world.

The average conception of the scrap business is the peddler and small junk shop. It is probably not known to the world at large that many scrap iron yards contain a half dozen or more power shears, some of them

costing $5000 each; traveling cranes with electric magnets, costing from $5000 to $10,000; that this business today is conducted in as scientific and up to date a manner as any other.

The scrap iron industry, as an important factor in commerce, was scarcely recognized up to about ten years ago; since then it has grown to enormous proportions. While the methods of conducting the business years ago might have been questionable, the element in control today includes on the average as honorable and able a class of men as engaged in any other line of trade.

The purpose of the organizations formed within the past month in Chicago and Pittsburgh is to acquaint the world with the fact that there exists in this country a scrap iron trade as important, as up to date, as progressive and as honorable as any other line of industry. Through these associations the trade itself will be raised to a higher standard. It is expected to have an arbitration board to settle disputes between members. A more friendly feeling among the dealers will develop through the mere fact of there being an association which brings them together (at meetings) from time to time. It will be possible to standardize the grading and specifications of scrap material, and the trade will, in the course of time, see the advisability and necessity of strictly adhering to these uniform standards, for this alone can do away with rejections of stock by consumers, which is the most obnoxious feature of the scrap business.

The primary purpose of the associations is co-operation; there is a great lack of this, and as a consequence the business has got into a "rut." A little co-operation between the dealer and consumer as well as the shipper and the dealer will help to eliminate a good many of the abuses which have not alone brought a perfectly legitimate trade into disrepute, but has made it unpleasant as well as unprofitable.

A BELIEVER IN ORGANIZATION.

New England Foundrymen's Association

The annual meeting of the New England Foundrymen's Association was held at the Exchange Club, Boston, Mass., January 14. A communication was received relative to the resignation of Dr. Richard Moldenke as secretary of the American Foundrymen's Association, and it was voted that the New England Association expresses its regrets and calls attention to the benefit that the American Association, through Dr. Moldenke, has been to the foundry interests as a whole. Reports of the officers were received and accepted.

The following officers were elected for the ensuing year: President, Charles L. Nutter, Old Colony Foundry Company, East Bridgewater, Mass.; vice-president, A. F. Corbin, Union Mfg. Company, New Britain, Conn.; treasurer, George H. Gibby, Gibby Foundry Company, East Boston; secretary, Fred F. Stockwell, Barbour-Stockwell Company, Cambridge, Mass. Executive committee, Charles A. Reed, Fears & Miller, Boston; J. C. Hosford, Magee Furnace Company, Chelsea, Mass.; D. K. Bartlett, Builders' Iron Foundry Company, Providence, R. I.; W. B. Leach, Hunt-Spiller Mfg. Company, Boston, Mass., and L. J. Harley, Jr., Millett & Harley Company, Springfield, Mass.

After the meeting the members dined and were then entertained by a vaudeville show.

In *The Iron Age* of January 8 a condensed description of the electric furnace of the Moffatt-Irving Steel Company, Ltd., Toronto, Canada, appeared under the title "Steel Castings Direct from the Ore." While credit for this was given to the Canadian Engineer, it should have been stated that the original article was written by Prof. Thomas R. Loudon, of the faculty of the University of Toronto.

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Mining Engineers' Iron and Steel Meeting

Announcement has been made by the Iron and Steel Committee of the American Institute of Mining Engineers that papers are assured for the iron and steel sessions of the February meeting of the Institute, as given below, which meeting is to take place in New York City, in the Engineering Societies Building, February 17, 18 and 19:

Dr. H. M. Howe and A. G. Levy, "Notes on Over-Strain."
Capt. R. W. Hunt, "American Steel Rail Mill Practice."
Sir Robert Hadfield, "On the Magnetism of Manganese Steel."
J. E. Johnson, Jr., "The Influence on the Quality of Cast Iron Exerted by Oxygen, Nitrogen and Some Other Elements."
J. V. Emmons, "The Surface Decarbonization of Tool Steel."
W. S. Potter, "Manganese Steel, with Relation of Physical Properties to Microstructure and Critical Ranges."
R. H. Rice, General Electric Company, "The Turbo Blower."
A. N. Diehl, superintendent blast furnaces, Carnegie Steel Company, "The Cleaning of Blast-Furnace Gases."
R. D. Young, "Notes on the Heat Treatment of Steel Castings."
H. J. Freyn, H. Koppers Company, "Notes on the Utilization of Blast-Furnace and Coke-Oven Gases for Power Purposes."

It is hoped also to have papers on the Diesel engine for mining and metallurgical purposes.

The Iron and Metal Markets

REPLENISHMENT BUYING

The Chief Factor in Current Demand

An Advance in Sheets—Scrap Active and Higher —A Cut in Ferromanganese

There is now so much of a tendency to overdraw the improvement in iron and steel that exact statements seem tame. What is most plainly shown by recent buying is the extent to which stocks of finished steel were used up in the lean weeks following September. The January business, that has been so well thought of, in contrast with that of November and December, has been largely replenishment. Manufacturing consumers of steel, in particular, have had to make up for many weeks of under buying.

The Steel Corporation's statement, showing but $4,200,000 earned in December—the smallest amount for any month save November and December, 1903, and January, 1904—reflects both the sheer drop in orders and the readjustment of prices on contract material. Shipments for the month were probably well below 500,000 tons.

Steel mills, it should be understood, have now no such backlog orders for the heavy finished forms as have always preceded price advances and steadily increasing employment.

Efforts of buyers to contract for the entire first half indicate more confidence in present prices. There is still some 1.15c. bar business, and weakness in plates is found in the Chicago district; but usually 1.20c. holds on plates, shapes and bars for the first quarter. Bars and plates for second quarter delivery have sold on the same basis, while 1.25c. is usual on shapes. Jobbers' offers of considerable tonnages for first half delivery at to-day's minimum prices have not been accepted, but manufacturing consumers have in some cases covered for the second quarter.

The larger steel companies have come to a 65 per cent. basis of ingot production this week. Pittsburgh mills have done better as a rule than those in the Chicago and some other districts.

An advance in sheets to 2c. for No. 28 black and 3c. for galvanized, representing $3 a ton, with $1 a ton advance on blue annealed, has been announced by the leading producer. Independent sheet mills, which went as low as 1.80c. for No. 28 black and more recently have sold at 1.85c., now ask 1.90c.

The activity in bars is still the best feature of current buying. One important seller has entered more than twice the tonnage this month that it took in December.

Some pipe and tube makers have gone beyond their January, 1913, business, which was a record. The Gulf Refining Company has placed 88 miles of 6-in. pipe for an oil line in Texas and Louisiana.

The structural outlook is more promising. Chicago reports 10,000 tons closed in the past week, including 4100 tons for the Whitney building at Detroit. In New York, 40,000 tons for further subway elevated sections is just coming up for bids.

Railroad buying is not yet important and there is little reason to believe that the railroads will come to the rescue of the mills in the expected February lull. The Union Pacific order for 5000 cars has been given out, and from the car works standpoint it was timely. In the New York district girder rail inquiries amount to 8000 tons. The Atlanta, Birmingham & Atlantic will buy 1250 tons of rails and the Tonopah & Tidewater, 1900 tons. The Southern Railway has bought 1000 tons additional and the Delaware & Hudson, 3000 tons of light rails.

Pig iron is quieter, though Western markets are still fairly active. At St. Louis 2500 tons of basic was taken and 10,000 tons is pending. At Buffalo the Port Colborne furnace has been a more active seller for Canadian delivery. Prices have not been helped by the considerable business done and it still lacks much of being an old-time buying movement. Tennessee iron has sold at $10.50 at furnace, figuring back to $10.25, Birmingham.

The revival in demand for old material, with advancing prices, after months of dreary depression, is the phenomenon of the market. Steel scrap has been attracted from the East to Pittsburgh by the advance there.

Foreign makers of ferromanganese have responded to the Steel Corporation's competition by cutting their price from $45 to $40 at Baltimore.

All non-ferrous metals have advanced in the week, with speculative factors confusing more than ordinarily the situation as to actual buying.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous.

	Jan. 28, 1914.	Jan. 21, 1914.	Dec. 31, 1913.	Jan. 29, 1913.
Pig Iron, Per Gross Ton:				
No. 2 X, Philadelphia...	**$14.75**	$14.50	$15.00	$18.50
No. 2 Valley furnace...	12.75	12.75	13.00	17.50
No. 2 Southern, Cin'ti...	13.75	13.75	13.75	16.75
No. 2, Birmingham, Ala.	10.50	10.50	10.50	13.50
No. 2, furnace, Chicago*	13.50	13.50	14.00	17.50
Basic, del'd, eastern Pa.	14.00	14.00	14.00	18.00
Basic, Valley furnace....	12.50	12.50	12.50	16.35
Bessemer, Pittsburgh....	14.90	14.90	15.15	18.15
Malleable Bess., Ch'go*..	13.50	13.50	14.00	17.50
Gray forge, Pittsburgh..	13.40	13.40	13.90	17.15
L. S. charcoal, Chicago..	15.25	15.25	15.25	18.00
Billets, etc., Per Gross Ton:				
Bess. billets, Pittsburgh.	**20.50**	20.00	20.00	28.50
O.-h. billets, Pittsburgh.	**20.50**	20.00	20.00	29.00
O.-h. sheet bars, P'gh...	**21.00**	20.00	21.00	29.50
Forging billets, P'gh....	24.00	24.00	24.00	36.00
O.-h. billets, Phila.....	**22.40**	21.50	21.50	32.00
Wire rods, Pittsburgh...	25.50	25.50	25.00	30.00
Old Material, Per Gross Ton:				
Iron rails, Chicago.....	13.00	13.00	13.00	16.75
Iron rails, Philadelphia.	**16.00**	15.50	15.50	18.00
Carwheels, Chicago	**12.00**	11.75	11.50	16.75
Carwheels, Philadelphia..	12.50	12.50	12.00	16.25
Heavy steel scrap, P'gh.	**11.50**	11.00	10.50	14.75
Heavy steel scrap, Phila.	11.00	11.00	10.00	14.00
Heavy steel scrap, Ch'go.	**9.75**	9.50	9.00	12.50
No. 1 cast, Pittsburgh..	10.75	10.75	10.75	15.00
No. 1 cast, Philadelphia.	12.00	12.00	12.00	14.50
No. 1 cast, Ch'go (net ton)	**10.50**	10.25	10.00	12.75
Finished Iron and Steel, Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Bess. rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia..	**1.22½**	1.20	1.22½	1.67½
Iron bars, Pittsburgh....	1.35	1.35	1.35	1.70
Iron bars, Chicago.....	1.10	1.10	1.10	1.57½
Steel bars, Pittsburgh...	1.20	1.20	1.20	1.70
Steel bars, New York....	1.36	1.36	1.36	1.86
Tank plates, Pittsburgh..	1.20	1.20	1.20	1.75
Tank plates, New York...	1.36	1.36	1.36	1.91
Beams, etc., Pittsburgh..	1.20	1.20	1.20	1.75
Beams, etc., New York..	1.36	1.36	1.31	1.91
Skelp, grooved steel, Pgh.	1.20	1.20	1.20	1.45
Skelp, sheared steel, P'gh.	1.30	1.30	1.30	1.50
Steel hoops, Pittsburgh.	*1.30*	1.35	1.35	1.60
Sheets, Nails and Wire, Per Lb. to Large Buyers:				
Sheets, black, No. 28, P'gh	**1.95**	1.85	1.85	2.35
Galv. sheets, No. 28, P'gh	**2.95**	2.85	2.85	3.50
Wire nails, Pittsburgh...	1.55	1.55	1.55	1.75
Cut nails, f.o.b. East'n mills	1.65	1.65	1.65	1.80
Cut nails, Pittsburgh....	**1.60**	1.55	1.55	1.70
Fence wire, base, P'gh...	1.35	1.35	1.35	1.55
Barb wire, galv., P'gh...	1.95	1.95	1.95	2.15

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Coke, **Connellsville,**

Per Net Ton at Oven:	Jan. 28, 1914.	Jan. 21, 1914.	Dec. 31, 1913.	Jan. 29, 1913.
Furnace coke, prompt...	$1.85	$1.85	$1.85	$3.50
Furnace coke, future....	2.00	2.00	2.00	3.15
Foundry coke, prompt...	2.50	2.50	2.50	4.25
Foundry coke, future....	2.60	2.60	2.60	3.60

Metals,

Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York.	**15.00**	14.75	15.12½	16.50
Electrolytic copper, N. Y.	**14.50**	14.37½	14.87½	16.30
Spelter, St. Louis.....	**5.20**	5.10	5.20	6.75
Spelter, New York.....	**5.35**	5.25	5.35	6.90
Lead, St. Louis.....	**4.02½**	3.97½	4.10	4.20
Lead, New York.....	4.10	4.10	4.15	4.35
Tin, New York.....	**39.12½**	37.85	37.37½	50.40
Antimony, Hallett's, N. Y.	7.00	7.00	7.00	9.25
Tin plate, 100-lb. box, Pgh.	$3.25	$3.25	$3.40	$3.60

Finished Iron and Steel f. o. b. Pittsburgh

Freight rates from Pittsburgh, in carloads, per 100 lb., New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Louis, 22½c.; Kansas City, 42½c.; Omaha, 42½c.; St. Paul, 32c.; Denver, 84½c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.20c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers with extras:

Rectangular plates, tank steel or conforming to manufacturer's standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per sq. ft., are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per sq. ft., to take base price. Plates over 72 in. wide ordered less than 11 lb. per sq. ft. down to the weight of 3-16 in. take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.	Cents per lb.
Gauges under ¼ in. to and including 3-16 in....	.10
Gauges under 3-16 in. to and including No. 8....	.15
Gauges under No. 8 to and including No. 9....	.25
Gauges under No. 9 to and including No. 10...	.30
Gauges under No. 10 to and including No. 12...	.40
Sketches (including straight taper plates) 3 ft. and over	.10
Complete circles 3 ft. in diameter and over.....	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel.....	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive.....	.05
Widths over 110 in. up to 115 in., inclusive.....	.10
Widths over 115 in. up to 120 in., inclusive.....	.15
Widths over 120 in. up to 125 in., inclusive.....	.25
Widths over 125 in. up to 130 in., inclusive.....	.50
Widths over 130 in.	1.00
Cutting to lengths, under 3 ft., to 2 ft. inclusive..	.25
Cutting to lengths, under 2 ft., to 1 ft. inclusive..	.50
Cutting to lengths, under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, 3 in. and over, 1.20c. to 1.25c. Extras on other shapes and sizes are as follows:

	Cents per lb.
I-beams over 15 in.	.10
H-beams over 18 in.	.10
Angles over 6 in. on one or both legs	.10
Angles, 3 in. on one or both legs, less than ¼ in. thick as per steel bars card, Sept. 1, 1909....	.70
Tees, structural sizes (except elevator, hand rail, car truck and conductor rail).....	.05
Channels and tees, under 3 in. wide, as per steel bar card, Sept. 1, 1909.....	.20 to .80
Deck beams and bulb angles.....	.30
Hand rail tees	.75
Cutting to lengths, under 3 ft., to 2 ft., inclusive	.25
Cutting to lengths, under 2 ft., to 1 ft., inclusive	.50
Cutting to lengths, under 1 ft.....	1.55

No charge for cutting to lengths 3 ft. and over.

Wire Rods.—Bessemer, open-hearth and chain rods, $25.50 to $26.

Wire Products.—Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots to jobbers annealed, $1.35; galvanized, $1.75. Galvanized barb wire and fence staples, to jobbers, $1.95; painted, $1.55. Wire nails to jobbers, $1.55. Prices of the foregoing wire products to dealers, in carload lots, are 5c. higher. Woven wire fencing, 74½ per cent. off list for carloads; 73½ off for 1000-rod lots; 72½ off for less than 1000-rod lots.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

Plain Wire, per 100 lb.

Nos.	0 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.55	$1.60	$1.65	$1.70	$1.80	$1.90	$2.00	$2.10
Galvanized ...	2.00	2.00	2.05	2.10	2.20	2.30	2.70	2.80

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on steel pipe in effect from October 27, 1913, and iron pipe from June 2, 1913, all full weight:

Butt Weld

Steel. Inches.	Black.	Galv.	Iron. Inches.	Black.	Galv.
⅛, ¼ and ⅜...	73	52½	⅛ and ¼	66	47
½	77	66½	⅜	65	46
¾ to 3	80	71½	½	69	56
			¾ to 2½	72	61

Lap Weld

2	77	68½	1¼	56	45
2½ to 6	79	70½	1½	67	56
7 to 12	76	65½	2	68	58
13 to 15	52	..	2½ to 4	70	61
			4½ to 6	70	61
			7 to 12	68	55

Reamed and Drifted

1 to 3, butt....	78	69½	1 to 1½, butt...	70	59
2, lap	75	66½	2, butt	70	59
2½ to 6, lap....	77	68½	1¼, lap	54	43
			1½, lap	65	54
			2, lap	66	56
			2½ to 4, lap....	68	59

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜...	68	57½	⅜	63	52
½	73	66½	½	67	60
¾ to 1½	77	70½	¾ to 1½	71	62
2 to 3	78	71½	2 and 2½	72	63

Lap Weld, extra strong, plain ends

2	74	65½	1½	65	59
2½ to 4.....	76	67½	2	66	58
4½ to 6	75	66½	2½ to 4	70	61
7 to 8	68	57½	4½ to 6	69	60
9 to 12	63	52½	7 and 8	63	53
			9 to 12	58	47

Butt Weld, double extra strong, plain ends

½	63	56½	½	57	49
¾ to 1½	66	59½	¾ to 1½	60	52
2 to 2½	68	61½	2 and 2½	62	54

Lap Weld, double extra strong, plain ends

2	64	57½	2	55	49
2½ to 4	66	59½	2½ to 4	60	54
4½ to 6	65	58½	4½ to 6	59	53
7 to 8	58	47½	7 to 8	52	42

To the large jobbing trade an additional 5 and 2½ per cent. is allowed over the above discounts.

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

Boiler Tubes.—Discounts to jobbers, in carloads, in effect from January 2, 1914, are as follows:

Lap-Welded Steel		*Standard Charcoal Iron*	
1¾ and 2 in.....	61	1½ in.	45
2¼ in.	58	1¾ and 2 in.....	49
2½ and 2¾ in.....	64	2¼ in.	45
3 and 6¼ in.....	69	2½ to 2¾ in.....	54
3½ and 4½ in.....	71	3 and 3¼ in.....	57
5 and 6 in.....	64	3½ to 4½ in.....	60
7 to 13 in.....	61	5 and 6 in.....	49

Locomotive and steamship special charcoal grades bring higher prices.

2½ in. and smaller, over 18 ft., 10 per cent. net extra.

2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft., and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points.

Sheets.—Makers' prices for mill shipment on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots from store, are as follows, f.o.b. Pittsburgh, terms 30 days net or 2 per cent. cash discount in 10 days from date of invoice:

Blue Annealed Sheets

	Cents per lb.
Nos. 3 to 8	1.40 to 1.45
Nos. 9 and 10	1.45 to 1.50
Nos. 11 and 12	1.50 to 1.60
Nos. 13 and 14	1.55 to 1.65
Nos. 15 and 16	1.65 to 1.70

Box Annealed Sheets, Cold Rolled

Nos. 10 and 11	1.60 to 1.65
No. 12	1.60 to 1.65
Nos. 13 and 14	1.65 to 1.70
Nos. 15 and 16	1.70 to 1.75
Nos. 17 to 21	1.75 to 1.80
Nos. 22 and 24	1.80 to 1.85
Nos. 25 and 26	1.85 to 1.90
No. 27	1.90 to 1.95
No. 28	1.95 to 2.00
No. 29	2.00 to 2.05
No. 30	2.10 to 2.15

Galvanized Sheets of Black Sheet Gauge

	Cents per lb.
Nos. 10 and 11	1.95 to 2.00
No. 12	2.05 to 2.10
Nos. 13 and 14	2.05 to 2.10
Nos. 15 and 16	2.20 to 2.25
Nos. 17 to 21	2.35 to 2.40
Nos. 22 and 24	2.50 to 2.55
Nos. 25 and 26	2.65 to 2.70
No. 27	2.80 to 2.85
No. 28	2.95 to 3.00
No. 29	3.10 to 3.15
No. 30	3.25 to 3.30

Pittsburgh

PITTSBURGH, PA., January 28, 1914.

Advances of $3 a ton in prices of black and galvanized sheets and $1 a ton on blue annealed sheets by the American Sheet & Tin Plate Company, slighter advances by the independent sheet mills, and a reduction of $5 a ton on English ferromanganese are important events of the week. The situation in the local steel trade is stronger in every way than for some time, and this is not confined to sentiment alone. Leading steel interests report orders and specifications very much heavier than in December, and jobbers and consumers are now bringing strong pressure on the mills to have them accept contracts for first half delivery, which the latter are inclined to resist. Most sellers are not willing to book orders at present prices for delivery beyond April 1, while for second quarter an advance of at least $1 a ton is asked. Prices are hardening and leading sellers state that every day they are turning down business offered at prices which are not satisfactory to them. The Carnegie Steel Company and the Jones & Laughlin Steel Company are running to from 65 to 70 per cent. of ingot capacity and expect to increase this to at least 75 per cent. in a short time. A strong feature of the situation is that nearly all the business now on the books of the mills is for delivery in first quarter. It is believed that the turn has been reached, and further improvement is expected. Buyers are no longer trying to get the mills to take lower prices, but are using their efforts to place contracts at present prices and for delivery as far ahead as they can.

Pig Iron.—The local pig-iron market has quieted down considerably. Inquiry for Bessemer and basic is light, but there is a fair movement in foundry. A local interest reports a sale of 1500 tons of No. 2 foundry for delivery up to July, at $13, at Valley furnace. The supply of Bessemer iron is pretty well controlled by two Valley interests, and the price is reasonably firm at $14 at furnace. Basic for prompt shipment can still be had at $12.50 at furnace, but some sellers are refusing to shade $12.75 for delivery through first half. We quote standard Bessemer iron at $14; basic, $12.50 to $12.75; No. 2 foundry, $12.75 to $13; malleable Bessemer, $13; gray forge, $12.50, for first quarter delivery, all at Valley furnace, carrying a freight rate of 90c. a ton for delivery in the Pittsburgh district.

Billets and Sheet Bars.—The Carnegie Steel Company has notified customers to whom it furnishes sheet bars on contracts on which the prices are adjusted monthly that the price of Bessemer and open-hearth sheet bars for February shipment will be $22, Pittsburgh, and some have agreed to pay this price. The whole steel market is firm. The two Youngstown interests are holding Bessemer and open-hearth sheet bars at $21 minimum, Youngstown. Bessemer and open-hearth billets are quoted at about $19.50, Youngstown, and about $20.50, Pittsburgh. We quote Bessemer and open-hearth billets at $20.50, and Bessemer and open-hearth sheet bars at $21 to $22, Pittsburgh. Forging billets are strong at $24 to $25 and axle billets $23 to $24, Pittsburgh.

Muck Bar.—This product is almost obsolete in this market as far as sales to consumers are concerned. Nearly all makers consume their entire product, and little is sold in the open market. We quote nominally at $28, Pittsburgh, but probably $27 could be done on a firm offer.

Steel Rails.—The leading roads are slow in placing their expected contracts. The new demand for light rails is quiet, and most of the business being placed is going to the rerolling mills, which are offering rerolled rails at about $2 a ton less than light rails rolled from billets. We quote splice bars at 1.50c. and standard section rails at 1.25c. Light rails, rolled from billets, are quoted as follows: 25, 30, 35, 40 and 45-lb. sections, 1.25c.; 16 and 20 lb., 1.30c.; 12 and 14-lb., 1.35c., and 8 and 10-lb., 1.40c., all in carload lots, f.o.b. Pittsburgh.

Plates.—Local steel car companies will clean up all the orders they have on their books about March 1. The report that the Union Pacific had increased its inquiry from 5000 to 12,000 cars is denied here by the steel car companies, who say the Pressed Steel Car Company has taken orders for 2000 box, 400 stock and 600 automobile cars for that road. The Virginian Railway is in the market for 1000 steel hopper cars. The new demand for plates is better, and the plate mills of the leading companies are running heavier than for several months. The market is stronger, and 1.20c. is minimum with all the mills. We quote ¼-in. and heavier plates at 1.20c., f.o.b. Pittsburgh.

Structural Material.—Inquiry is more active. The Riter-Conley Mfg. Company has taken 1700 tons for transmission towers for the Aluminum Company of America at Massena Springs, N. Y., 125 tons for Coniston, Ont., and a considerable tonnage for miscellaneous tower parts for the Sao Paulo Tramway, Light & Power Company, Sao Paulo, Brazil; the Jones & Laughlin Steel Company, 1500 tons for the Detroit Athletic Club and 1000 tons for a realty building in Indianapolis; the McClintic-Marshall Company 4000 tons for the Whitney bank building in Detroit, Mich., and 340 tons for a steel building for South Boston, Mass.; the American Bridge Company, 1900 tons for seven small bridges for the new Cleveland & Youngstown Railroad and 20 pontoons for the United States Government at Little Rock, Ark., about 350 tons; the Mt. Vernon Bridge Company, Mt. Vernon, Ohio, 200 tons of bridge work for the Baltimore & Ohio Railroad. The market on structural shapes is firmer, and 1.20c., Pittsburgh, now seems to be minimum on sizes up to 15 in.

Ferroalloys.—A cut of $5 a ton has been made on English 80 per cent. ferromanganese, which brings it down to $40, seaboard. This is a reduction of $7 a ton since January 1. The Carnegie Steel Company, which is a seller of domestic ferromanganese, has not yet announced whether it will meet this new price or not. A good deal of inquiry is in the market for delivery over all of this year, but consumers fear to close, as reports are current of another cut on foreign in a short time. Two carloads, or about 60 tons, for prompt shipment were sold to-day at $40, seaboard. Prices on ferrosilicon are firm, and we note sales of two cars, or about 60 tons, at $73 delivered. The Carnegie Steel Company has closed for 8000 tons or more of ferrosilicon, representing the requirements for this year of all the constitutent interests of the Steel Corporation that use it. The freight rate on English ferromanganese for delivery in the Pittsburgh district from Baltimore is $2.16: We quote 50 per cent. ferrosilicon, in lots up to 100 tons, at $73; over 100 tons to 600 tons, $72; over 600 tons, $71, delivered in the Pittsburgh district. We quote 10 per cent. ferrosilicon at $20; 11 per cent., $21, and 12 per cent., $22, f.o.b. cars Jackson County, Ohio, or Ashland, Ky., furnaces. We quote 20 per cent. spiegeleisen at $25 at furnace. We quote ferrotitanium at 8c. per lb. in carloads; 10c. in 2000-lb. lots and over, and 12½c. in less than 2000-lb. lots.

Wire Rods.—Makers report the new demand quiet, but, in sympathy with wire products, prices on rods are firmer. New inquiry is in the market for 3000 to 4000 tons of open-hearth rods, part for shipment to Canada. We quote Bessemer, open-hearth and chain rods at $25.50 to $26, Pittsburgh.

Skelp.—Several fairly large orders for grooved and sheared iron skelp were placed in this market last week on the basis of about 1.60c. for grooved iron and 1.65c. for sheared. The mills rolling skelp for the open market are busy and have work ahead for several months. We quote grooved steel skelp at 1.20c.; sheared steel skelp, 1.30c.; grooved iron skelp, 1.60c. to 1.62½c.; and sheared iron skelp at 1.65c. to 1.67½c.

Iron and Steel Bars.—Specifications against contracts for steel bars are much heavier than for a long time. One leading interest reports its orders and specifications up to January 26 nearly three times as large as in the same period last month. Consumers are crowding in specifications and are anxious to contract for second and third quarter deliveries on the basis of 1.20c., but as a rule the mills are refusing to sell beyond April at this price. The new demand for reinforcing bars is also active and prices are firm. The steel-bar mills in this district are running at a greater rate of capacity than for some months. We quote steel bars at 1.20c. for first quarter, and it is stated that the price of 1.15c. has practically disappeared. We quote common iron bars at 1.35c. to 1.40c., Pittsburgh, and new demand is reported a little better.

Sheets.—Effective Thursday, January 22, the American Sheet & Tin Plate Company made an advance of practically $3 a ton in prices of black and galvanized sheets, or from 1.85c. to 2c. for No. 28 black and 2.85c. to 3c. for No. 28 galvanized. Other leading sheet mills have also advanced prices, although not as much as the leading interest. The new demand for some weeks has been active and specifications have been heavier. Jobbers and the consuming trade were pretty well covered for first quarter prior to the advance and are specifying freely. The American Sheet & Tin Plate Company is now operating close to 80 per cent. of its hot sheet mill capacity, the heaviest rate of operation for some months. Other mills are also running better. For delivery in first quarter we quote No. 28 Bessemer black sheets at 1.95c. to 2c. and No. 28 galvanized at 2.95c. to 3c. We quote Nos. 9 and 10 blue annealed sheets for first quarter delivery at 1.45c. at mill; No. 28 tin mill black plate, H. R. and A., 1.90c. to 1.95c.; Nos. 29 and 30, 1.95c. to 2c. It is possible that on a very desirable specification some mills might sell for February and March delivery on the basis of 1.90c. for No. 28 black and 2.90c. for No. 28 galvanized. These prices are f.o.b. Pittsburgh, in carload and larger lots, jobbers charging the usual advances for small lots from store.

Bolts and Rivets.—The new demand for nuts and bolts is better, and jobbers and consumers alike are now trying to place contracts for forward delivery at present prices. Makers say they are not willing to sell far ahead, believing that the demand will be better and prices higher in two or three months. The demand for rivets is stronger, and the tone of the market is firmer. We quote button-head structural rivets at $1.65 to $1.70 and cone-head boiler rivets at $1.75 to $1.80, in carload lots, an advance of $2 to $3 a ton over these prices being charged for small lots, depending on the order. Terms are 30 days net, less 2 per cent. for cash in 10 days. Discounts on nuts and bolts are as follows in lots of 300 lb. or over, delivered within a 20c. freight radius of makers' works.

Coach and lag screws	80 and 20% off
Small carriage bolts, cut threads	75 and 17½% off
Small carriage bolts, rolled threads	80 and 2½% off
Large carriage bolts	70 and 15% off
Small machine bolts, cut threads	80 and 2½% off
Small machine bolts, rolled threads	80 and 7½% off
Large machine bolts	75 and 10 and 2½% off
Machine bolts, C.P.C. & T nuts, small	70 & 12½% off
Machine bolts, C.P.C. & T nuts, large	70 & 12½% off
Square H.P. nuts, blanked and tapped	$6.00 off list
Hexagon nuts	$6.70 off list
C.P.C. & R sq. nuts, blanked and tapped	$5.80 off list
Hexagon nuts, ⅝ and larger	$6.80 off list
Hexagon nuts, smaller than 9/16	$7.40 off list
C.P. plain square nuts	$5.30 off list
C.P. plain hexagon nuts	$5.70 off list
Semi-fin. hex. nuts, ⅝ and larger	85 and 10% off
Semi-fin. hex. nuts, smaller than 9/16	85, 10 & 5% off
Rivets, 7/16 x 6½, smaller and shorter	80 and 10% off
Rivets, metallic tinned, bulk	80 and 10% off
Rivets, tin plated, bulk	80 and 10% off
Rivets, metallic tinned, packages	80 and 10% off
Standard cap screws	75, 10, 10 and 7½% off
Standard set screws	75, 10, 10 and 7½% off

Tin Plate.—There is not much new buying, as probably 95 per cent. of all that will be used this year is under contract. The mills report that specifications are heavy, and one leading interest is trying to operate up to 4 o'clock on Saturday afternoon. The American Sheet & Tin Plate Company is operating to full capacity all its available plants with the exception of three in the Pittsburgh district which have not been active for some months and may possibly never be started again. Some inquiry for tin plate for export is in the market on which lower prices are quoted than for domestic delivery. We quote 100 lb. cokes from $3.25 to $3.40, and 100 lb. ternes from $3.15 to $3.30 per base box.

Shafting.—Makers report the new demand better, and jobbers and consumers are now trying to place contracts for delivery over first half of the year at present discounts. The makers are trying to avoid taking contracts for delivery beyond April, and report specifications as coming in more freely. We quote cold-rolled shafting in carload and larger lots at 64 per cent. off and in small lots 60 to 63 per cent. off, depending on the order, delivered in base territory.

Hoops and Bands.—Nearly all consumers being covered for this quarter, the new demand is only fair and mostly for small lots. Prices are firmer. We quote bands at 1.20c., with extras as per the steel bar card, and steel hoops 1.30c., f.o.b., Pittsburgh. It is stated that the 1.25c. price on steel hoops has practically disappeared.

Wire Products.—Specifications for wire and wire nails in the past two weeks have been very heavy, more so than expected by the manufacturers, and shipments by the mills are going out freely. Only a fair amount of new business is being placed, as jobbers and the consuming trade covered their requirements for 60 days ahead prior to the withdrawal from the market of the low prices by the leading makers. The mills state that on current business they are refusing to shade $1.55 on wire nails and $1.35 on plain wire. One leading maker of wire and wire nails in this district is now running its mills practically full, for the first time in six or eight months. We quote wire nails to jobbers at $1.55; cut nails, $1.60; annealed wire, $1.35; galvanized barb wire and fence staples, $1.95; painted barb wire, $1.55, f.o.b., Pittsburgh, per 100 lb., usual terms, actual freight added to point of shipment. We quote woven wire fencing at 74½ per cent. off in carload lots; 73½ per cent. off on 1000-rod lots, and 72½ per cent. on less than 1000-rod lots, all f.o.b. Pittsburgh.

Railroad Spikes.—Heavy inquiries are in the market from Western roads and some are trying to cover their requirements over the whole year at present prices. Makers, however, are refusing to take such contracts, believing that prices will show betterment in the near future. We quote railroad spikes in large lots at $1.45 and small railroad and boat spikes at $1.55 per 100 lb., f.o.b., Pittsburgh.

Merchant Steel.—Orders are reported by several makers as being a little better, and jobbers and consumers are now disposed to contract through first half or longer at present prices. The mills are fighting off contracts for delivery beyond April at present prices. Prices are firmer. We quote: Iron finished tire, ½ x 1½ in., and larger, 1.35c., base; under ½ x 1½ in., 1.50c.; plainished tire, 1.55c.; channel tire, ¾ to ⅞ and 1 in., 1.85c. to 1.95c.; 1⅛ in. and larger, 1.95c.; toe calk, 1.95c. to 2.05c., base; flat sleigh shoe, 1.70c.; concave and convex, 1.75c.; cutter shoe, tapered or bent, 2.25c. to 2.35c.; spring steel, 1.95c. to 2.05c.; machinery steel, smooth finish, 1.80c. We quote cold-rolled strip steel as follows: Base rates for 1 in. and 1½ in. and wider, under 0.20 carbon, and No. 10 and heavier, hard temper, 3.25c.; soft, 3.50c.; coils, hard, 3.15c.; soft, 3.40c.; freight allowed. The usual differentials apply for lighter sizes.

Standard Pipe.—Two mills state that their actual orders this month will show a good increase over December. Some large inquiries are in the market for oil and gas lines. The Gulf Refining Company of this city has placed an order with the National Tube Company for 88 miles of 6-in. steel pipe for an oil line in Texas and Louisiana. The Philadelphia Company of this city has placed a good part of its recent inquiry for 12,000 tons of pipe and oil country goods, divided among local, Youngstown, Wheeling and Eastern mills. Included in the order were 200,000 ft. of 3-in. and 100,000 ft. of 2-in. iron pipe which went to a local mill. The Columbus Gas & Fuel Company, which had up early last year the project of laying a natural gas line from

the West Virginia gas fields to Columbus, Ohio, has again taken it up actively, and this, if placed, will take upward of 170 miles of 16-in. Developments in the oil and gas fields in the Southern States promise to be very active this year, and the mills are expecting some heavy orders for line pipe to come out at an early date. Operations among the mills are at a heavier rate, one leading interest stating it is running close to 90 per cent. of capacity. It is claimed that discounts on both iron and steel pipe are being quite firmly held, and some in the trade are looking for an advance on steel pipe at an early date.

Boiler Tubes.—New buying in both locomotive and merchant tubes is only fair. The locomotive shops have not much work ahead. The boiler shops have not been placing much business for some time. An improvement in demand for tubes is looked for in the near future.

Coke.—While there is some inquiry out for furnace coke for delivery over first half, consumers are slow in closing. One prominent furnace interest has picked up some odd lots in the past two weeks at about $1.75 at oven, but it is stated this is not strictly standard coke. A furnace interest in the Wheeling district has bought about 12,000 tons of strictly standard furnace coke for February delivery for which it paid $2 at oven. The Cambria Steel Company is negotiating for a large tonnage of blast furnace coke for delivery over all of this year. We note a sale of 50 cars of prompt furnace coke at $1.90. Nothing further has been heard in regard to reductions in wages of coke workers, and it is not believed this will become general. We quote strictly best grades of furnace coke for first half delivery at $2 per net ton at oven, but some standard grades are offered at $1.85 to $1.90. We quote strictly standard 72-hour foundry coke at $2.50 per net ton at oven to consumers, but some grades can be had at a lower price. The output of coke in the Upper and Lower Connellsville regions last week was 268,357 tons, an increase over the previous week of nearly 8000 tons.

Old Material.—The scrap market is showing signs of a small sized boom. Prices on heavy steel scrap, borings and turnings and some other grades are higher. Makers of scrap are inclined to hold it for higher prices, and this policy has extended to the railroads. The scrap lists of the Pennsylvania and the Baltimore & Ohio railroads issued in the last few days show a smaller tonnage of scrap than for many months. Some dealers are holding heavy steel scrap at $12, but others are naming slightly lower prices. There has been an advance of about $1 a ton in low phosphorus melting scrap, and borings and turnings are up about 50c. and are scarce. One leading maker has paid as high as $9 delivered for borings. We have advanced quotations on some grades of scrap 50c. to $1 a ton and report the whole market very firm. Dealers are quoting about as follows per gross ton for delivery in the Pittsburgh and other districts:

Selected heavy steel scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen, Midland and Pittsburgh delivery	$11.50 to $11.75
Compressed side and end sheet scrap	9.75 to 10.00
No. 1 foundry cast	10.75 to 11.00
No. 2 foundry cast	9.75 to 10.00
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district	7.50 to 7.75
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	13.25 to 13.50
No. 1 railroad malleable stock	11.25 to 11.50
Grate bars	7.50 to 7.75
Low phosphorus melting stock	15.00 to 15.25
Iron car axles	24.25 to 24.75
Steel car axles	17.25 to 17.50
Locomotive axles, steel	20.75 to 21.25
Locomotive axles, iron	25.25 to 25.75
No. 1 busheling scrap	10.25 to 10.50
No. 2 busheling scrap	6.25 to 6.75
*Machine shop turnings	7.75 to 8.00
Old carwheels	11.75 to 12.00
*Cast-iron borings	8.50 to 8.75
†Sheet bar crop ends	12.25 to 12.50
Old iron rails	14.25 to 14.50
No. 1 railroad wrought scrap	13.50 to 13.75
Heavy steel axle turnings	9.00 to 9.25
Stove plate	7.50 to 7.75

*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.

†Shipping point.

Chicago

CHICAGO, ILL., January 28, 1914—(*By Wire*).

The apprehension that the active buying of steel in the first part of January, by those who were financially able to take advantage of low prices and buy for stock, might be followed by a lull has not been borne out. On the contrary, it is encouraging to note that buying has increased. As regards structural steel in particular, the month's contracts for fabricated work present avenues of consumption for a large part of the mill bookings. The booking of sheets has also been very heavy in the last 10 days and an advance from the low level to which values had been liquidated has been definitely made. Specifications for steel bars, while not exceptional in volume, are substantial. The market is having its first tangible measure of the extent to which stocks were depleted, both in terms of the tonnage being booked and the proportion of that business which is ordered for early shipment. Perhaps the most favorable aspect of the immediate situation is the fact that nearly all of the business that has been placed will be shipped in the first quarter. The railroads are not yet important factors because of orders placed; in fact, the absence of car buying has left the market for sheared plates with but little support. There remain in this market a number of attractive inquiries for pig iron, with sales averaging close to 3000 tons a day. Foundries report the booking of increased business but contracts for castings are not being made with any haste. This fact is dragging out the buying period somewhat. For old material, prices are higher. The entry into this market of two new consumers last week had a distinctly strengthening influence.

Pig Iron.—On first thought, the surprising feature of the Chicago market is the failure of prices to show any firmness on the strength of the buying that has been done. It is still possible to buy iron of ordinary specifications at prices as favorable to the melter as at any time during the present movement. There is little apparent improvement from the irregularities of a week ago. It would be difficult to say whether the furnaces seem more eager for the business at their doors where the competition is local or in the outskirts of the territory where the prices of outside irons must be met. While $13.50, f.o.b. furnace, seems to have been touched as a low limit thus far, $13.75 has been done in the past week. At such prices it is obvious that Southern furnaces are securing but a meager portion of local business even at the lowest quotations that have been cited, f.o.b. Birmingham. Such sales of Southern iron of regular No. 2 analysis as are noted are for the most part on the basis of $10.50, Birmingham. A small tonnage at prices 50c. a ton higher is reported and some Southern irons with a favorable freight differential to this market have been sold at prices which figure $10.25, Birmingham, but are $10.50 or better, f.o.b. furnace. The Illinois Steel Company is delivering ferromanganese to customers in this territory. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic iron, which are f.o.b. furnace and do not include a local switching charge averaging 50c. a ton:

Lake Superior charcoal, Nos. 1, 2, 3, 4	$15.25 to $15.75
Northern coke foundry, No. 1	14.00 to 14.50
Northern coke foundry, No. 2	13.50 to 14.00
Northern coke foundry, No. 3	13.00 to 13.50
Southern coke No. 1 f'dry and 1 soft	15.10 to 15.60
Southern coke, No. 2 f'dry and 2 soft	14.60 to 15.10
Southern coke, No. 3	14.10 to 14.60
Southern coke, No. 4	13.60 to 14.10
Southern gray forge	13.60 to 14.10
Southern mottled	13.10 to 13.60
Malleable Bessemer	13.50 to 14.00
Standard Bessemer	17.65
Basic	13.50 to 14.00
Jackson Co. and Kentucky silvery, 6 per cent.	17.40
Jackson Co. and Kentucky silvery, 8 per cent.	18.40
Jackson Co. and Kentucky silvery, 10 per cent.	19.40

(*By Mail*)

Rails and Track Supplies.—Considering the low ebb to which the movement of freight has gravitated and the other adverse conditions which have not yet been modified the railroads are probably no less a factor in

the increased buying of steel than should be expected. Reports of rails purchased recently at Chicago while premature are heralds of purchases already assured. The railroads continue to be active purchasers of track fastenings, spikes in particular moving freely. The Illinois Central is about to place orders for a round lot of rail joints. Prices for track fastenings have not yet experienced the reaction generally true of other steel products. We quote standard railroad spikes at 1.50c. to 1.55c., base; track bolts with square nuts, 2.05c. to 2.10c., base, all in carload lots, Chicago; tie plates, $27 to $28 net ton; standard section Bessemer rails, Chicago, 1.25c., base; open hearth, 1.34c.; light rails, 25 to 45-lb., 1.25c.; 16 to 20-lb., 1.30c.; 12-lb., 1.35c.; 8-lb., 1.40c.; angle bars, 1.50c., Chicago.

Structural Steel.—In view of the buying of steel from mill by fabricators since January 1 it is especially gratifying to note that this activity is supported by a corresponding increase in orders for fabricated steel. The past week, contracts placed with bridge and structural shops aggregated 10,000 tons which is a much better showing than has been developed in several weeks. The David Whitney Building at Detroit will require 4110 tons to be furnished by the McClintic-Marshall Company, The American Bridge Company will supply 1915 tons for the Fontenelle Hotel at Omaha, Neb., and 172 tons for a bridge span for the Duluth, Missabe & Northern. The Kansas City Structural Steel Company has taken orders for 1693 tons for the John Taylor Dry Goods Company's building at Kansas City and also 169 tons for the State Capitol at Salt Lake City. The Llewellyn Iron Works will fabricate 1200 tons of steel for a municipal dock at Los Angeles and the Western Iron Works 150 tons for the Vaysie Brothers Hotel at San Francisco. The Chicago, Milwaukee & St. Paul has placed an additional 227 tons of bridge steel with the Wisconsin Bridge & Iron Company. Orders were also placed for 141 tons for a theater building at Seattle and 107 tons for five highway spans in Brown County, N. D. Of the steel for the Fontenelle Hotel and the Taylor store about half will be Bethlehem shapes. With the available capacity of one of the local structural mills well sold up, for nearly 90 days, this market presents its firmest aspects in connection with transactions in structural shapes. One mill is asking 1.25c. Pittsburgh and Eastern mills are quoting as high as 1.30c., while quotations as low as 1.20c. are less frequent and limited to immediate specifications. Buying continues well sustained. For Chicago delivery and prompt shipment limited to first quarter we quote 1.38c. to 1.43c.

The influence of the heavier buying has made itself felt in store trade, especially in the mill order business. We quote for Chicago delivery from stock, 1.75c.

Plates.—The absence of car buying has deprived a number of sheared plate mills of expected tonnage, and in this direction there has been less response to the strengthening tendencies of the market than in any other. Sheared plates are still quotable at 1.15c., Pittsburgh, and are if anything more easily obtainable at that price than bars. The Union Pacific has not yet closed for the equipment covered by its inquiry. The Atchison, Topeka & Santa Fe will shortly buy 1000 cars which will have steel underframes and may be entirely of steel construction. We quote for Chicago delivery, mill shipment, first quarter delivery 1.33c. to 1.38c.

Out of store we quote for Chicago delivery, 1.75c.

Sheets.—This market is practically without a definite basis for quotation for the time being, following the announcement by the leading interest of the withdrawal of the prevailing low prices. It seems certain that after the exceptionally heavy booking of tonnage that preceded the price announcement, new quotations will be at a distinct advance. It is believed that this market's principal sources of supply for sheets are now filled up until May. As nearly as can be ascertained, these mills are now unwilling to take business at less than 3.13c., Chicago, for galvanized, with the customary differential of 1c. for black sheets. Our quotations are entirely nominal. We quote for Chicago delivery from mill: No. 10 blue annealed, 1.68c. to 1.73c.; No. 28 black, 2.13c. to 2.18c.; No. 28 galvanized, 3.13c. to 3.18c.

For sheets out of store we quote for Chicago delivery as follows, minimum prices applying on bundles of 25 or more; No. 10 blue annealed, 1.95c.; No. 28 black, 2.45c. to 2.55c.; No. 28 galvanized, 3.50c. to 3.60c.

Bars.—Specifications the past week for steel bars have been sufficient to sustain the feeling of optimism. The implement interests were responsible for somewhat larger purchases, although at this season their activity is normally reduced. Quotations equivalent to 1.15c., Pittsburgh, have not entirely disappeared for immediate shipment, but 1.20c. is being asked for an increasing proportion of the business. Bar-iron tonnage shows no appreciable increase but the higher prices now obtaining for scrap are an influence toward greater firmness on the part of the makers of bars. Our quotations, if confined to the period of the last few days, would probably fail to include prices as low as 1.10c. The irregularities that have characterized shafting quotations have not entirely disappeared, and discounts of from 64 to 66 per cent. are noted. We quote for mill shipment as follows: Bar iron, 1.10c. to 1.15c.; soft steel bars, 1.33c.; hard steel bars, 1.30c.; shafting in carloads, 65 per cent. off; less than carloads, 60 per cent. off.

We quote store prices for Chicago delivery: Soft steel bars, 1.65c.; bar iron, 1.65c.; reinforcing bars, 1.65c. base, with 5c. extra for twisting in sizes ½ in. and over, and usual card extras for smaller sizes; shafting 57 per cent. off.

Rivets and Bolts.—The local situation not only lacks the support of new business to restore a semblance of firmness to the market for rivets but the placing in operation of the new rivet plant at East Chicago, thus far idle, adds to the opposing influences. Business is being taken at prices as low as 1.73c., Chicago. We quote from mill as follows: Carriage bolts up to ⅜ x 6 in., rolled thread, 80-12½; cut thread, 80-5; larger sizes, 75-10; machine bolts up to ⅜ x 4 in., rolled thread, 80-15; cut thread, 80-10; larger size, 75-15; coach screws, 80-15-10; hot pressed nuts, square head, $6.20 off per cwt.; hexagon, $7 off per cwt. Structural rivets, ½ to 1¼ in., 1.73c. to 1.78c., base, Chicago, in carload lots; boiler rivets, 10c. additional.

Out of store we quote for structural rivets, 2.40c., and for boiler rivets, 2.60c. Machine bolts up to ⅝ x 4 in., 70-10-10; larger sizes, 70-12½; carriage bolts up to ⅜ x 6 in., 75-10; larger sizes, 70-12½ off. Hot pressed nuts, square head, $5.50, and hexagon, $6.20 off per cwt.

Wire Products.—The past week has been one of substantial tonnage for makers of wire and wire products. The trade having covered heavily, particularly as regards nails, at the low prices is now specifying in a very satisfactory manner. We quote to jobbers as follows: Plain wire, No. 9 and coarser, base, $1.53; wire nails, $1.73; painted barb wire, $1.73; galvanized, $2.13; polished staples, $1.73; galvanized, $2.13, all Chicago.

Cast-Iron Pipe.—Tonnage is materializing in cast-iron pipe in much more nearly normal volume since the first of the year. The 5200 tons of 8-in. placed at Chicago last week was awarded to the Glamorgan Pipe Company. At Minneapolis the tonnage was divided, 1600 tons of the larger sizes going to the United States Cast Iron Pipe & Foundry Company and the remainder to the American Cast Iron Pipe Company. An aggregate of about 5000 tons of gas pipe was also placed during the week. Municipal lettings for the current week include 700 tons at Milwaukee, 800 tons at Wabasha, Minn., and 400 tons at Wayne, Mich. We quote as follows, per net ton, Chicago: Water pipe, 4 in., $27; 6 to 12 in., $25; 16 in. and up, $24, with $1 extra for gas pipe.

Old Material.—The determined effort which has been back of the advance in scrap prices in this market was supported last week by the buying of two new factors—the Alton Steel Company and the Kokomo Steel & Wire Company—both of which companies operate open-hearth plants. There is, as a result, more basis for quoting consumers' buying prices at higher levels. It still remains true that the major portion of old material changing hands, particularly that sold by the railroads, commands a premium over that going direct to melters. This is ordinarily true on an advancing market but is pronouncedly so at this time as the result of the limited buying by consumers. Borings

have shown a sharp advance as a result of Eastern demand. Railroad lists submitted for bids include one for 2000 tons from the Chicago, Milwaukee & St. Paul, 2300 tons from the Chicago, Burlington & Quincy, 2100 tons from the Rock Island and 8000 tons from the Baltimore & Ohio. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Old iron rails	$13.00 to $13.50
Old steel rails, rerolling	11.25 to 11.50
Old steel rails, less than 3 ft	10.25 to 10.75
Relaying rails, standard section, subject to inspection	24.00
Old carwheels	12.00 to 12.25
Heavy melting steel scrap	9.75 to 10.00
Frogs, switches and guards, cut apart	9.75 to 10.00
Shoveling steel	8.75 to 9.25
Steel axle turnings	6.50 to 7.00

Per Net Ton

Iron angles and splice bars	$12.50 to $13.00
Iron arch bars and transoms	12.50 to 13.00
Steel angle bars	8.50 to 9.00
Iron car axles	17.25 to 17.75
Steel car axles	12.75 to 13.25
No. 1 railroad wrought	9.00 to 9.50
No. 2 railroad wrought	8.50 to 8.75
Cut forge	8.50 to 8.75
Steel knuckles and couplers	9.00 to 9.50
Steel springs	9.75 to 10.25
Locomotive tires, smooth	10.75 to 11.25
Machine shop turnings	4.75 to 5.00
Cast borings	5.00 to 5.50
No. 1 busheling	8.00 to 8.25
No. 2 busheling	6.25 to 6.75
No. 1 boilers, cut to sheets and rings	6.00 to 6.50
Boiler punchings	9.50 to 10.00
No. 1 cast scrap	10.50 to 11.00
Stove plate and light cast scrap	9.75 to 10.00
Grate bars	9.50 to 10.00
Railroad malleable	9.75 to 10.00
Agricultural malleable	8.25 to 8.75
Pipes and flues	7.25 to 7.50

Philadelphia

PHILADELPHIA, PA., January 27, 1914.

The markets generally are gradually gaining strength, bargain prices are disappearing and advances over recent low quotations are becoming more and more effective. Mill bookings in finished materials have been larger and specifications against contracts heavier. Operations at finishing mills have been a trifle better. While there has been considerable movement in pig iron, aggregate sales have been lighter. At the same time prices have stiffened materially. Specifications on steel billets are better. Coke is quieter. Further activity has developed in the old material market with higher prices.

Iron Ore.—Foreign ores are quiet, although low ocean freights are expected to develop some interest in Mediterranean ores. Shipments of Venezuela ore have temporarily ceased. Cuban ore output has been curtailed and shipments of Canadian and Newfoundland ores are suspended owing to closing of navigation. Importations were confined to a cargo of 4240 tons of Cuban ore.

Pig Iron.—Buying in the higher foundry grades has been comparatively good following the recent heavy movement induced by low prices. In many cases consumers have placed contracts which are understood to be in excess of requirements, believing prices to be at the bottom. Sellers have been resisting business bearing the earmarks of speculative purchases and in practically all cases prices have firmed up. Buffalo iron is no longer a competitor in this district. Eastern Pennsylvania furnaces have practically withdrawn quotations below $14.75, delivered, for standard brands of No. 2 X foundry, and in instances where $15 has been asked quotations are now 25c. a ton higher and a fair amount of business taken at the new basis. In few cases recently have sales in the higher foundry grades been in excess of 1000 tons to any one consumer. Some first half business has been entered. The movement in low grade iron, of which cast-iron pipe makers have been heavy buyers, has quieted down. Odd lot sales at about $14, delivered at Delaware River points, continue to be made. One Delaware River melter is out with an inquiry for 2000 to 3000 tons for near future delivery. Somewhat better sales of Virginia foundry iron, largely for delivery over the next three months, have been made with prices showing more firmness at $12.75 at furnace for No. 2 X foundry. An inquiry for 500 tons of malleable foundry for February delivery from a melter in this vicinity is before the trade. Steel making grades are quieter. No inquiry for basic iron is reported from consumers in this district. Negotiations are pending for moderate lots of standard analysis low phosphorus pig, although unconfirmed reports are to the effect that an Eastern consumer has closed for a lot of 1500 tons of Lebanon Valley. Rolling mill forge iron remains quiet. While the general inquiry is somewhat lighter, owing to the fact that many buyers have covered for their first quarter needs, producers take a more optimistic view of the situation. Furnace order books are in better shape and more strength in price maintenance is shown. The following range of prices about represent the market for standard brands, delivered in buyers' yards in this vicinity, during the first quarter and in instances during the first half of the year:

Eastern Penna. No. 2 X foundry	$14.75 to $15.25
Eastern Pennsylvania No. 2 plain	14.50 to 14.75
Virginia No. 2 X foundry	15.55 to 16.00
Virginia No. 2 plain	15.30 to 15.50
Gray forge	14.00 to 14.25
Basic	14.00
Standard low phosphorus	21.00 to 21.25

Ferroalloys.—Following the reduction of $5 a ton in the price of 80 per cent. ferromanganese, announced by foreign producers, considerable small lot business was transacted in this district. One seller reports sales of upward of 1200 tons, a portion of which was for delivery over the remainder of the year. Eighty per cent. ferromanganese is now quoted at $40, seaboard. There has been little movement in ferrosilicon.

Billets.—Eastern mills have been receiving better specifications on contracts, but new business still has a tendency to drag. In several instances expiring contracts have been renewed, at least as far as requirements for the first half of the year are concerned, usually at prices representing $22.40 delivered for ordinary rolling steel. The leading producer in this district, whose open-hearth plant has been idle since December 20, put four furnaces in operation this week and has enough business ahead to keep them operating about a month. Producers are more inclined to hold basic open-hearth rolling billets at $22.40 delivered here, which rules for current small business but the market has not been seriously tested. Forging billets have been in somewhat better demand and command $4 to $5 advance over rolling billets.

Plates.—The market shows increasing strength. While business is still irregular, mills are gradually increasing their productive rate, in one case 80 per cent. being attained last week. A good volume of miscellaneous business comes out from day to day and as a rule better prices are obtained. For first quarter delivery 1.35c. here appears to be bottom, while on second quarter business 1.40c. delivered is clearly more general. Considerable tonnage in second quarter contracts has been entered at the latter figure. Specifications have been heavier on bridge plates, while car and locomotive plates are in better demand. An inquiry for 1000 tons of plates for a gas holder is before the trade.

Structural Material.—A better demand for plain structural shapes, with more firmness in prices, is apparent. There has been more contracting against three to six months' requirements but some mills will not accept business for delivery beyond April 1 at ruling quotations. Other mills ask $1 advance for second quarter delivery. New business has been confined to small lots, although some moderate sized business in building work is ahead. Mill operations have been on a trifle better basis. Quotations for plain shapes delivered in this district range from 1.35c to 1.40c., dependent on tonnage and shipment.

Sheets.—A greater volume of business has been moving with more contracting for first and second quarter. Eastern mill rolling schedules are now in somewhat better shape. A better volume of miscellaneous business has been closed and prices are firmer. Prompt and first quarter deliveries on No. 10 blue annealed sheets are firm at 1.55c., delivered here, while on second quarter business 1.60c. has been more freely obtained.

Bars.—A fair amount of new business has been coming out in both iron and steel bars. Specifications have been better and mill operations have been on a more regular basis. Current quotations for steel bars remain at 1.35c. here, although some producers are holding at 1.40c. for forward deliveries. Ordinary iron bars are held at 1.22½c. to 1.27½c., delivered here, with the better grades commanding up to 1.32½c.

Coke.—The market has been quiet, business being confined to small sales for early delivery. Coke producers are showing less disposition to sell for forward shipment. The following range of prices per net ton is still being named for delivery in buyers' yards in this district.

Connellsville furnace coke	$3.90 to $4.40
Connellsville foundry coke	4.80 to 5.15
Mountain furnace coke	3.60 to 4.10
Mountain foundry coke	4.50 to 4.85

Old Material.—The market is extremely sensitive, inquiry or sales, even though they be small, having a marked tendency to advance prices. While there has been no mill inquiry for heavy melting steel in this district, the movement to mills outside the territory strengthens the situation. An Eastern interest has been endeavoring to purchase 10,000 tons of borings but was unable to get satisfactory prices. Mills are offering better prices for turnings, and No. 1 railroad wrought has been sold at higher figures. Following a speculative movement in wrought pipe, prices advanced nearly $1 on mill sales. Malleable scrap has been moving to steel mills at advanced prices. The following quotations about represent the market for deliveries in buyers' yards in this district, covering eastern Pennsylvania and taking freight rate varying from 35c. to $1.35 per gross ton:

No. 1 heavy melting steel	$11.00 to $11.50
Old steel rails, rerolling	12.50 to 13.00
Low phosphorus heavy melting steel scrap (nominal)	14.00 to 14.50
Old steel axles	15.50 to 16.00
Old iron axles (nominal)	21.00
Old iron rails	16.00 to 16.50
Old carwheels	12.50 to 13.00
No. 1 railroad wrought	13.50 to 14.00
Wrought-iron pipe	11.00 to 11.25
No. 1 forge fire	8.50 to 9.00
Bundled sheets	8.50 to 9.00
No. 2 light iron (nominal)	5.00
No. 2 busheling (nominal)	8.00 to 8.50
Wrought turnings	8.50 to 9.00
Cast borings	8.50 to 9.00
Machinery cast	12.00 to 12.50
Grate bars, railroad	9.25 to 9.75
Stove plate	9.25 to 9.75
Railroad malleable (nominal)	10.00 to 10.50

Cleveland

CLEVELAND, OHIO, January 27, 1914.

Iron Ore.—Dock shipments are beginning to show an improvement. Very little ore was shipped from docks to furnace yards in December or in the greater part of January, but some new shipping orders are now coming from the furnace interests. It is probable that there will be more ore on the docks at the opening of navigation this year than at the corresponding time of any previous year. Ore firms as yet have received practically no requests for ore reservations for the coming season. With conditions improving in the iron and steel industry sellers are expected to try to defer as long as possible the settlement of the price question, as the amount of the reduction in prices will depend on business conditions and the outlook at the time prices are established. We quote 1913 prices as follows: Old range Bessemer, $4.40; Mesaba Bessemer, $4.15; old range non-Bessemer, $3.50; Mesaba non-Bessemer, $3.40.

Pig Iron.—While the market is not so active as two or three weeks ago, a fair volume of business is coming out in foundry grades. The tone of the market has improved and there appears to be less low priced iron on the market than a few weeks ago. In the Valley No. 2 foundry is still to be had at $12.75 and the same quotation can probably be secured from Cleveland furnaces for outside shipment although their open quotation is now $13. The Best Foundry Company, Bedford, Ohio, has purchased 4500 tons of iron for the first half delivery, 3000 tons of Northern foundry, most of which went to a Cleveland furnace, and 1500 tons of Ohio silvery, which was bought at $15.75 or possibly lower for 8 per cent. silicon. These purchases were made for the first half delivery. Another sale of 400 tons of silvery was made in Cleveland at $15.75 furnace, which is 25c. a ton lower than recent minimum quotations. Among new inquiries is one from a Bucyrus manufacturer for 750 tons of No. 2 analysis iron for the first half. Some last half inquiries are coming out, consumers endeavoring to secure the present low prices for that delivery. Furnaces, however, are declining to make quotations for shipment beyond July. The demand for Southern iron is light. While Alabama furnaces are adhering to $10.75 to $11 for No. 2 foundry some spot shipment Tennessee iron is still being offered at $10.50 Birmingham. We quote delivery Cleveland as follows:

Bessemer	$14.90
Basic	13.00
Northern No. 2 foundry	13.50
Southern No. 2 foundry	$15.10 to 15.35
Jackson Co. silvery, 8 per cent. silicon	17.30 to 18.10

Coke.—There has been a fair demand for foundry coke contracts for the first half, but consumers are now mostly under cover and new inquiry is light. A few small lot sales of furnace coke are reported. We quote standard Connellsville foundry coke at $1.80 to $1.90 per net ton at oven for prompt shipment and $1.85 to $2 for contract. Standard foundry coke is quoted at $2.50 to $2.75.

Finished Iron and Steel.—Demand in finished lines continues quite active both for material for prompt shipment and for contracts and the optimistic feeling in the trade continues. Prices are stiffening up somewhat although some sales of steel bars for prompt shipment made in the week at 1.15c. Pittsburgh indicate that that price has not entirely disappeared. For the first quarter steel bars generally are firm at 1.20c. and mills are asking 1.25c. for the second quarter. Plates can still be had at 1.15c. although 1.20c. is the minimum quotation made by most of the mills. Structural material is firm at 1.20c. for prompt shipment and some of the mills are trying to get an advance at $1 a ton over this price. Some business has been taken at the advance. For the first quarter delivery 1.25c. is the ruling price. Bar iron is firm at minimum quotation of 1.20c. Cleveland. The Cleveland & Youngstown Railway is in the market for 1300 tons of reinforcing bars for bridge work in addition to 1900 tons of structural material placed last week with the American Bridge Company. Although the demand for fabricated work has been improved considerably, the dullness of the past few months has left shops with little work on hand and very low prices are being quoted. Among new inquiries is one for 1000 tons for a power plant at Lowellville, Ohio. Following the advance in sheet prices made by the leading interest, the market has stiffened and independent makers are asking higher prices. Minimum sheet quotations now appear to be 1.90c. for No. 28 black, 2.90c. for No. 28 galvanized and 1.45c. for No. 10 blue annealed for delivery within the next few weeks, these prices being $1 a ton higher than minimum quotations a week ago. The active demand for rivets has resulted in a stiffening of prices and minimum quotations are now 1.60c. for structural rivets and 1.70c. for boiler rivets, or $1 a ton higher than prices that have prevailed recently. Warehouse prices are unchanged at 1.80c. for steel bars and 1.90c. for plates and structural material.

Old Material.—The market is very firm and prices on several grades have been advanced. For the present it is largely a dealers' market. Some of the dealers who have sold short are trying to cover at prices that in some cases are 50c. a ton higher than their prices to the mills. The demand from consumers as yet does not show much improvement. One Cleveland mill is offering $10.25 for heavy melting steel and dealers have paid as high as $9 for busheling. Quotations on borings, turnings and busheling have been advanced 50c. or more a ton. The supply of scrap both in dealers and producers hands at present is said to be light and this

supply is being quite generally held for higher prices. We quote f.o.b. Cleveland as follows:

Per Gross Ton

Old steel rails, rerolling	$12.00 to $12.50
Old iron rails	12.50 to 13.00
Steel car axles	16.50 to 17.00
Heavy melting steel	10.00 to 10.25
Old carwheels	11.50 to 12.00
Relaying rails, 50 lb. and over	23.00 to 25.00
Agricultural malleable	9.00 to 9.50
Railroad malleable	11.00 to 11.25
Light bundled sheet scrap	7.00 to 7.50
Bundled tin scrap	11.00 to 11.50

Per Net Ton

Iron car axles	$18.50 to $19.00
Cast borings	6.00 to 6.50
Iron and steel turnings and drillings	5.50 to 5.75
Steel axle turnings	6.00 to 6.25
No. 1 busheling, new	8.75 to 9.00
No. 1 busheling, old	8.50 to 8.75
No. 1 railroad wrought	11.00 to 11.25
No. 1 cast	10.50 to 11.00
Stove plate	8.00 to 8.50

Cincinnati

CINCINNATI, OHIO, January 28, 1914—(*By Wire*).

Pig Iron.—Interest continues to be centered in basic iron, and it is further enhanced by an inquiry from a southern Ohio steel company for its last half supply. Quotations have not yet been made, as the furnaces hesitate about selling that far ahead. It is safe to say that a premium over present prices will have to be paid if the order is placed now. Rumors continue to be circulated as to small lots of Northern foundry iron being sold for prompt shipment slightly below $13, Ironton, but this particular lot of iron is now said to be out of the market. A Central Western firm contracted for 2000 tons of Northern No. 2 at $13, Ironton, for first half shipment, and several smaller sales were made on the same basis to Indiana melters. A central Ohio consumer also took 1000 tons of Northern foundry iron and there were several purchases of smaller volume made by nearby melters. The Michigan consumers who have been previously quoted as being in the market are slow in closing. More Southern iron is now being offered at $10.50, Birmingham basis, for first half shipment, although one furnace interest has recently closed several small contracts at $11, but they were not made in this immediate territory. There are few new inquiries before the trade, but there is considerable unclosed business that has been pending for two or three weeks. A large brake shoe manufacturer is expected to close soon for a round tonnage of charcoal and coke foundry irons for its different plants. There is some interest taken in the Ohio silvery irons, but sales are light and $16 at furnace can be done for first half shipment. Malleable is very dull, with no prospect of showing any early improvement. Based on freight rates of $3.25 from Birmingham and $1.20 from Ironton we quote f.o.b. Cincinnati, as follows:

Southern coke, No. 1 f'dry and 1 soft	$14.25 to $14.75
Southern coke, No. 2 f'dry and 2 soft	13.75 to 14.25
Southern coke, No. 3 foundry	13.25 to 13.75
Southern, No. 4 foundry	12.75 to 13.25
Southern gray forge	12.25 to 12.75
Ohio silvery, 8 per cent. silicon	17.20 to 17.70
Southern Ohio coke, No. 1	15.20 to 15.70
Southern Ohio coke, No. 2	14.20 to 14.70
Southern Ohio coke, No. 3	13.95 to 14.20
Southern Ohio malleable Bessemer	14.20 to 14.70
Basic, Northern	14.20 to 14.70
Lake Superior charcoal	16.25 to 17.25
Standard Southern carwheel	27.25 to 27.75

(*By Mail*)

Coke.—About the only business transacted in this territory within the past few days was in foundry coke. The orders booked are mainly for prompt shipment, although a few small consumers contracted for a first half supply. A large majority of both furnace and foundry users are well supplied for several months, but there will probably be some buying of carload quantities by consumers who have not thus covered. Prices are unchanged, $2 per net ton at oven, Connellsville, being the general quotation on 48-hr. coke, although several brands are offered as low as $1.90, but only for nearby shipment. Foundry coke is quoted in all three fields around $2.50 to $2.75 at oven, but both Wise County and Pocahontas producers are asking the higher figure, and in some instances about 10c. a ton more for first half shipment.

Finished Material.—The demand for both black and galvanized sheets is very good, but mills are refusing to book orders except for prompt shipment. The advance in quotations to 2.15c. to 2.20c. on No. 28 black sheets, f.o.b. Newport, Ky., or Cincinnati, is well maintained, and only desirable tonnages are being taken at the lower figure. Galvanized sheets are quoted at 3.15c. to 3.20c. Structural material continues to hold its own, as far as small lots from warehouse stocks are concerned. The very mild winter has stimulated building operations. Reinforcing concrete rods are much better selling material than at this time last year. Steel bars are unchanged at 1.75c. to 1.80c., and structural shapes and plates 1.85c. to 1.90c. from local warehouse stocks.

Old Material.—The improved demand for scrap from the rolling mills, reported as a rumor last week, appears now to be an actual condition. This has undoubtedly had a stiffening effect on prices, and another advance is anticipated at an early date. The foundries are also buying small quantities, although the total tonnage is not up to the usual standard for this season. The minimum figures given below represent what buyers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' prices, f.o.b. at yards:

Per Gross Ton

Bundled sheet scrap	$6.25 to $6.75
Old iron rails	10.75 to 11.75
Relaying rails, 50 lb. and up	19.50 to 20.00
Rerolling rails, steel	10.75 to 11.25
Melting steel rails	9.00 to 9.50
Old carwheels	10.00 to 10.50

Per Net Ton

No. 1 railroad wrought	$8.25 to $8.75
Cast borings	4.25 to 4.75
Steel turnings	4.25 to 4.75
No. 1 cast scrap	8.50 to 9.00
Burnt scrap	5.75 to 6.25
Old iron axles	15.75 to 16.25
Locomotive tires (smooth inside)	9.50 to 10.00
Pipes and flues	5.50 to 6.00
Malleable and steel scrap	6.50 to 7.00
Railroad tank and sheet scrap	4.25 to 4.75

Birmingham

BIRMINGHAM, ALA., January 26, 1914.

Pig Iron.—Sales of Birmingham district pig iron, including basic, of which there was a large tonnage, have probably approximated 200,000 tons for the first three weeks of January and will certainly have reached that figure when the month's reckoning is ascertained. There is no doubt that the major portion of this iron was sold at not above $10.75, with some at $10.50, while a small amount, confined largely to one maker, went at $11. The higher levels were reached on sales for Southern territory, the lower in competitive territory in the Middle West. Some of the $10.50 iron was sold to meet the competition of accumulations at idle Tennessee furnaces. Strenuous denial is made in all quarters of offerings or sales at anything under $10.50. The usual quotation now is $10.75 to $11. The interests quoting $10.75 declare that price to be for competitive territory only and for the rest of the first quarter as well as for limited quantities. One company, which has sold 20,000 tons this month, declares that recent sales of over 8000 tons were made at $11. Certain No. 2 soft foundry grades do bring that price. The Clifton iron of the Alabama Company is bringing from $12 to $13, and 5000 tons have been sold this month with one furnace producing. The Holt furnace of the Central Iron & Coal Company has gone out for repairs, and it is understood that the company has purchased pig iron of other makers to fill its contracts. The leading interest is reported as asking $11, but no sales of any consequence by this or other companies asking this price, with one exception, seem to have been made. The general opinion is that the market has stiffened considerably. We quote, per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 1 foundry and soft	$11.25 to $11.50
No. 2 foundry and soft	10.75 to 11.00
No. 3 foundry	10.25 to 10.50
No. 4 foundry	10.00 to 10.25
Gray forge	9.75 to 10.00
Basic	10.50 to 10.75
Charcoal	23.50 to 24.00

Cast-Iron Pipe.—The pipe makers, especially manufacturers of water and gas pipe, report much better conditions. The leading interest has all pits in its Bessemer shop in operation on large orders from Kansas City, Chicago, Portland and other municipalities. Other shops have enlarged operations, and shipments are likewise heavy. The outlook is better than it has been in months, the inquiry from municipalities having greatly improved. We quote, per net ton, f.o.b. plants, as follows: 4-in., $22; 6-in. and upward, $20.

Coal and Coke.—There is only partial operation at some of the domestic mines, but the steam coal operators have become busy again. The mild winter has cut down consumption and local yards still have a supply on hand. Coke has improved in tone in view of expected industrial betterment, and prices are firm. We quote, per net ton, f.o.b. oven, as follows: Furnace coke, $2.50 to $3; foundry, $3.25 to $4.

Old Material.—The scrap dealers have done a larger business recently than in some time. Several round tonnages were disposed of. Prices have not stiffened to the point where they can be uniformly demanded, but the following quotations, per gross ton, f.o.b. dealers' yards, are a fair representation of the going business:

Old iron axles (small)	$15.00 to $15.50
Old steel axles (light)	15.00 to 15.50
Old iron rails	12.50 to 13.50
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	10.00 to 10.50
No. 1 country wrought	9.50 to 10.00
No. 2 machinery cast	10.50 to 11.00
No. 1 steel scrap	10.50 to 11.00
Tram carwheels	10.50 to 11.00
Standard carwheels	12.00 to 12.50
Light cast and stove plates	9.00 to 9.50

German Trade Continues Quiet

Plates Sold at Very Low Prices—Tube Combination May Fall Through

BERLIN, January 15, 1914.

The situation appears to have improved slightly, as is indicated by the fact that the De Wendels at Hayingen have this week advanced thin sheets to 135 marks ($32.13) at the works. On the other hand, there is some news of a less favorable character. It is reported that a large sale of plates has just been made at lower prices than had hitherto been reached, but the price is not mentioned. It is also pointed out that the higher prices adopted last week by Hoesch and several other companies are without significance, since they are getting no orders at the new prices.

The better news from the United States for several days has attracted attention on the Stock Exchange and has caused a slightly stronger tendency for iron shares.

The Tube Combination Strikes a Snag

The most important news of the week was the announcement yesterday that the negotiation for the completion of the tube combination had been broken off, the Thyssen interests having made demands which the other works could not grant. Thyssen, however, has to-day given out a denial of the news in that form. He says the breakdown occurred because his firm and the Mannesmanns were unable to reach an agreement as to the distribution of quotas in the larger sizes. It is stated that Thyssen and Mannesmann again took up this morning the discussion of their points of disagreement and are still trying to carry forward the matter to an amicable adjustment.

The ore market is very quiet; dealers in foreign ores in particular report that furnaces are buying with extraordinary caution, and prices are kept so low that dealers can hardly make profits. French minettes from the Briey district now cost 14 marks ($3.33), delivered at Ruhr ports.

The pig-iron trade is not showing the slightest animation. In foreign business the Syndicate is compelled to make concessions to meet the competition of English iron. At an early meeting of the Syndicate a hearing will be given to the foundrymen, to hear their complaints about prices. The shipments in December dropped to 78 per cent. of allotments, which compares with 81.57 per cent. for November.

The total shipments of the Steel Works Union in 1913 in semi-finished products, structural forms and steel rails and ties reached 6,339,500 metric tons, as against 6,445,800 tons in 1912. The December shipments amounted to 457,500 tons, which compares with 462,100 tons for November, and 532,400 tons for December, 1912.

From the Silesian district it is reported that the demand for rolled products has improved somewhat this month, and that the prospects for spring business are looked upon as good, as greater activity in building operations is expected. Wholesale dealers have been placing contracts under that belief.

A Welsh Tinplate Association

Proposal to Regulate Tinplate Output — Ferromanganese Reduced to $40

(*By Cable*)

LONDON, ENGLAND, January 28, 1914.

The tendency toward improvement is generally maintained but markets remain quiet. Coal is easier but steel is rather firmer.

Ferromanganese for America has been reduced to $40 c.i.f., owing to competition of American furnaces. Welsh tinplate makers are proposing to form an association to regulate output on similar lines to the galvanized sheets association, and a committee has been appointed to work out the details. Stocks in Connal's stores are 135,980 tons, against 134,806 tons last week. We quote as follows:

Tin plates, coke 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, about 13s. ($3.16), an advance of 4½d.

(The following prices are per ton of 2240 lb.):

Cleveland pig iron warrants (Tuesday), 50s. 10d. ($12.36) against 50s. 8d. ($12.32), one week ago.

No. 3 Cleveland pig iron, makers' price, f.o.b. Middlesbrough, 51s. 6d. ($12.53) against 51s. 3d. ($12.47) last week.

Hematite pig iron, f.o.b. Tees, 62s. ($15.08).

Steel sheet bars (Welsh), delivered at works in Swansea Valley, £4 10s. ($21.89).

Steel bars, export, f.o.b. Clyde, £5 17s. 6d. ($28.59), a decline of 2s. 6d.

Steel joists, 15-in., export, f.o.b. Hull or Grimsby, £5 12s. 6d. ($27.37), an advance of 5s.

Steel ship plates, Scotch, delivered local yards, £6 17s. 6d. ($33.46).

Steel black sheets, No. 28, export, f.o.b. Liverpool, £9 ($43.80).

Steel rails, export, f.o.b. works port, £6 2s. 6d. ($29.81).

(The following prices are per export ton of 1015 kilos, equivalent to 2237.669 lb.):

German sheet bars, f.o.b. Antwerp, 81s. ($19.70), a decline of 1s.

German 2-in. billets, f.o.b. Antwerp, 76s. ($18.48), a decline of 1s.

German basic steel bars, f.o.b. Antwerp, £4 10s. ($21.89), a decline of 1s.

German joists, f.o.b. Antwerp, £5 2s. to £5 5s. ($24.82 to $25.55).

(*By Mail*)

American Conditions Have Been Holding the Market Back

LONDON, January 17, 1914.

The quarterly meeting of ironmasters at Birmingham, which was held last week, was a colorless affair, and since then matters have drifted along without any special feature. The markets generally are swayed by the continued adverse nature of trade advices from the United States and the Continent, and it is not much use to look for any real improvement in sentiment until things in those directions take a turn for the better. Sentiment is a trifle stronger, however. The one satisfactory feature is the strength of pig iron. Prices of

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Cleveland iron have indeed shown wonderful resistance to the later phases of slackness in the trade news, and there seems to be a certain amount of truth in the assertion that it is impossible to make iron at current costs and show a profit. There is an easier tendency in prices of raw material, however, and this will tell its tale when once the lower priced contracts become operative for ore, etc. But as an offset the fact remains that production has been cut down heavily, leaving but an insignificant surplus to be handled. A trifle more inquiry has been met with in the last few days for some of the export markets, and the slightly improved tendency is causing some of the furnace owners to think that they would do best for themselves by waiting a bit before selling. Hence the prices asked for forward delivery are rather stiff, comparatively speaking. Much more has been done in hematite, and prices are a good deal firmer. A little while ago hematite went begging at well below 60s. ($14.58) a ton for East Coast mixed numbers, f.o.b., and it was then that the big Sheffield steel makers jumped in and helped themselves plentifully. Now business has been done at 62s. ($15.07) and some producers are holding out for 63s. ($15.31), which price it is quite possible may be realized. Spring buying is not far off now and should give the market a brighter appearance when it matures. The Japanese demand for pig iron has been disappointing lately; at the same time there is said to be a boom in the Japanese demand for automatic pistols for immediate shipment to Dalny. This looks as if trouble is brewing for somebody.

Competition in Billets and Sheet Bars

While there has not been much doing in steel the market has kept pretty steady. Consumers, however, are holding back demands till the last possible minute. Most of the attention centers upon half finished material, in which this week there has been more life shown, one or two of the largest consumers having placed contracts, as they feel convinced that the market has touched bottom. The bulk of the business went to the Germans, who accepted very low prices, but a part of it also went to Belgium and a portion to France. Prices paid have ranged from about 79s. ($19.20) upward for sheet bars, f.o.b. Antwerp, while American makers, after a few sales at 85s. ($20.66), c.i.f. Liverpool, raised their ideas to 88s. 9d. ($21.57), but-today would probably acept 87s. 6d. ($21.27). While prices all round cannot be far off the bottom there is a lack of confidence which it appears that only a distinct improvement in overseas conditions, especially those in America, can retore.

St. Louis

ST. LOUIS, MO., January 26, 1914.

Pig Iron.—Buying continued good and both Northern and Southern iron were included in purchases. Chicago furnaces got a large proportion of the Northern iron because of an indisposition of the Valley furnaces to meet the competition. At $12.75 for No. 2 Northern, Ironton basis, and $13.50 for No. 2 X Chicago the latter had the best of it by about 25 cents per ton delivered. The basic tonnage placed in the week was 25,000 and all but 5000 went to the only Southern producing interest. The 5000 tons taken was Northern largely on a try-out. An inquiry for 10,000 tons basic has not been placed. Smaller closures include 1500 tons of 8 per cent. silicon Northern; 2200 tons of malleable divided into three lots; 1000 tons of warrant iron, No. 3 grade; 500 tons of Southern No. 2. In Northern iron sold were several lots of 2500 tons and over, aggregating about 13,000 tons, handled by one representative. Inquiries include one for 3000 tons of malleable. Indications now are that large consumers in this territory are pretty well covered and buying from now on will be with the smaller users. Southern No. 2 stands fairly firmly at $10.50, Birmingham basis, though there are intimations that in the large basic transaction noted there were attractive concessions made.

Coke.—Coke was rather quiet save for one large transaction in which 12,000 tons was taken by a smelter interest in this territory at a figure which was withheld. The contract was for by-product coke and it will come from the Indianapolis, Ind., plant. Connellsville and Virginia coke is moving only in deliveries under contract at present and only very small lots of new business have appeared. By-product coke continues to be quoted on the Connellsville basis.

Finished Iron and Steel.—The market continues to show increasing orders for the most part for small quantities for fabricating shops. The largest transactions of the week were about 1700 tons for the Taylor Dry Goods Company's building at Kansas City and about 1500 tons for a building in East St. Louis for the Aluminum Ore Company. A hotel is to be erected at Omaha, to cost about $1,000,000, and Selden-Breck, St. Louis, has the general contract. In standard section rails the only inquiry is for 6000 tons to be placed this week. Other roads are making tentative inquiries. Light rails are very quiet; plates show no life and bars both ordinary and reinforcing, are in fair request. Track fastenings are in satisfactory demand for the season.

Old Material.—While a better tone and higher prices prevail dealers are inclined to complain that they are not able to cash in on the sentiment which prevails. Real business is expected to develop shortly from the steel mills and foundries. No new lists appeared and the market tone remains strong despite the small business moving. Relaying rails are in good request, with the quantities available rather limited. We quote dealers' prices f.o.b. St. Louis as follows:

Per Gross Ton

Old iron rails	$12.00 to $12.25
Old steel rails, re-rolling	11.75 to 12.00
Old steel rails, less than 3 feet	11.00 to 11.25
Relaying rails, standard section, subject to inspection	23.00 to 24.00
Old carwheels	11.25 to 11.75
Heavy melting steel scrap	10.50 to 11.00
Shoveling steel	9.00 to 9.50
Frogs, switches and guards cut apart	10.50 to 11.00
Bundled sheet scrap	5.50 to 6.00

Per Net Ton

Iron angle bars	$10.50 to $11.00
Steel angle bars	9.00 to 9.50
Iron car axles	17.00 to 17.50
Steel car axles	11.75 to 12.25
Wrought arch bars and transoms	12.00 to 12.25
No. 1 railroad wrought	9.00 to 9.50
No. 2 railroad wrought	8.50 to 9.00
Railroad springs	10.00 to 10.50
Steel couplers and knuckles	9.25 to 9.50
Locomotive tires, 42 in. and over, smooth	10.00 to 10.50
No. 1 dealers' forge	7.75 to 8.25
Mixed borings	3.75 to 4.25
No. 1 busheling	8.00 to 8.75
No. 1 boilers, cut to sheets and rings	6.00 to 6.50
No. 1 cast scrap	9.25 to 9.75
Stove plate and light cast scrap	8.50 to 9.00
Railroad malleable	8.50 to 9.00
Agricultural malleable	8.00 to 8.25
Pipes and flues	6.00 to 6.50
Railroad sheet and tank scrap	6.00 to 6.50
Railroad grate bars	8.00 to 8.25
Machine shop turnings	5.00 to 5.25

Buffalo

BUFFALO, N. Y., January 27, 1914.

Pig Iron.—Orders are coming forward in moderate but steady volume at steadier and stiffer prices after the reaction from the heavy buying at low level prices. The well-established figure for No. 2 X Foundry is $13 and quite heavy sales have been made at this figure within the last 10 days and some furnaces are asking $13.25 this week. Total purchases for the week approximate 15,000 tons—all grades; with inquiry for considerable tonnage, possibly 20,000 tons, still open. The Canadian Furnace Company's plant at Port Colborne has sold about 20,000 tons of various grades in the past 10 days. Increased activity is reported in charcoal iron and prices in that commodity have stiffened slightly. For first quarter delivery we quote as follows f.o.b. furnace:

No. 1 foundry	$13.25 to $13.50
No. 2 X foundry	13.00 to 13.25
No. 2 plain	13.00
No. 3 foundry	12.75 to 13.00
Gray forge	12.50 to 12.75
Malleable	13.00 to 13.50
Basic	13.50 to 14.00
Charcoal	15.50 to 16.50
Charcoal, special brands and analysis	17.00 to 19.50

Finished Iron and Steel.—Actual orders now being taken are heavier in volume than at any period since last June. It is the opinion of mill representatives that by the close of the first quarter mills will be operating to normal capacity. Consumers are endeavoring to negotiate contracts extending through the second quarter, but are meeting with resistance. Where contracts for second quarter have been taken, they have been at an advance of $1 per ton over the price asked for first quarter, with some mills asking an advance of $2. The selling agency of one independent interest reports its minimum price for second quarter as 1.30c., Pittsburgh, for bars and 1.35c. for shapes and plates. Sheets have been advanced $3: Galvanized sheets to a 3c. base for No. 28 gauge; black to 2c. and tin mill sheets to 1.95c., and there is a disinclination on the part of sellers to enter contracts beyond the first half even at the higher prices. The Carnegie Steel Company has taken 750 tons reinforcing bars for the Buffalo, Rochester & Pittsburgh terminal warehouse, Rochester. The Onondaga Steel Company, Syracuse, has taken 500 tons for the administration and infirmary buildings, Onondaga County Tuberculosis Sanitorium, Syracuse, and the Industrial Iron Company, 1 Madison avenue, New York, has 100 tons for the New York Telephone Company at Binghamton, N. Y.

Old Material.—Sales in all the listed commodities are being made and dealers are able to obtain a slight advance over recent sales. The possible exception to this is heavy melting steel. Dealers are not inclined to sell even at prices nearest the maximum of the present schedule for more than a 30-day delivery period. Inquiries from consumers are numerous and dealers are looking for heavier business at higher prices in the near future. Prices, although very strong, are not quotably higher than reported last week. We quote as follows, per gross ton f.o.b., Buffalo:

Heavy melting steel	$10.25 to $11.00
Bundled sheet scrap	6.25 to 6.75
No. 1 busheling scrap	8.75 to 9.25
No. 2 busheling scrap	6.00 to 6.50
Low phosphorus steel scrap	15.00 to 15.75
Iron rails	15.00 to 15.50
No. 1 railroad wrought	12.00 to 12.50
No. 1 railroad and machinery cast scrap	12.00 to 12.50
Steel axles	17.00 to 17.50
Iron axles	22.50 to 23.00
Carwheels	11.00 to 11.50
Railroad malleable	10.50 to 11.00
Locomotive grate bars	9.50 to 10.00
Wrought pipe	8.50 to 9.00
Machine shop turnings	5.25 to 5.75
Heavy steel axle turnings	8.25 to 9.00
Clean cast borings	6.00 to 6.50
Stove plate (net ton)	9.75 to 10.00
Bundled tin scrap	12.00

The Joseph Joseph & Brothers Company has bought the scrap-handling plant of Hazard, Coates & Bennett, including the storage yard, at South Buffalo, N. Y., near the plant of the Lackawanna Steel Company. It is well equipped and ready for immediate operations. It is intended, however, to put in five additional shears and another locomotive crane and oxy-acetylene gas apparatus for cutting. Henry L. Eckstein, formerly of Buffalo, where he was resident manager for the firm of R. L. Ginsberg & Co., now out of existence, has again taken up his residence in Buffalo and will be resident manager for the Joseph Joseph & Brothers Company. The purchase of this yard completes the chain of yards which this company has steadily been acquiring, now comprising yards at Chicago, St. Louis, Pittsburgh, Lebanon, Coatesville, New York and Boston, thus forming practically a circle, with Buffalo in the center.

The fortnightly bulletin of the American Railway Association shows that on January 15 the net surplus of freight cars on the lines of the United States and Canada was 214,889, or an increase of 26,039 over the number reported January 1. The last previous surplus that closely approached the one just reported was 207,261 cars on March 15, 1911. The maximum surplus in 1909 was 332,513 cars for January 6. In 1908 it was 413,338 cars on April 29, and in 1907 it was 208,526 cars on December 24.

Boston

BOSTON, MASS., January 27, 1914.

Old Material—The market increases in hopefulness, and the tendency of prices continues upward, with a 50c. advance in cast borings as the substantial feature. Material is coming out slowly, and transactions are not numerous, but everyone is looking for an active movement of scrap in the near future. The quotations given below are based on prices offered by the large dealers to the producers and to the small dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points which take Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of $2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices:

Heavy melting steel	$8.00 to $8.25
Low phosphorus steel	13.75 to 14.75
Old steel axles	13.25 to 13.75
Old iron axles	21.25 to 21.75
Mixed shafting	12.25 to 12.50
No. 1 wrought and soft steel	9.00 to 9.25
Skeleton (bundled)	6.00 to 6.50
Wrought iron pipe	7.00 to 7.25
Cotton ties (bundled)	7.00 to 7.25
No. 2 light	3.75 to 4.25
Wrought turnings	4.50 to 5.00
Cast borings	5.50 to 6.00
Machinery, cast	11.25 to 11.50
Malleable	8.00 to 8.25
Stove plate	7.75 to 8.00
Grate bars	6.25 to 6.50
Cast-iron carwheels	11.00 to 11.25

New York

NEW YORK, January 28, 1914.

Pig Iron.—On the whole the market is considerably quieter. January goes out with less activity than it began. A 3000-ton sale has been made this week for shipment over the first half, the purchaser being an interest which buys in New York for plants in other districts. In New Jersey a 2000-ton sale was made for shipment over the first quarter and most of the second, the business going to a Lehigh Valley producer on the basis of about $13.50 at furnace for No. 2 X, and a shade under $13.25 for No. 2 plain. Another New Jersey buyer placed 1000 tons. Two or three large interests have done some buying and sales for Schenectady delivery are put at 3000 to 4000 tons. In general the foundry trade is going ahead on a restricted scale of operations, with profits far from satisfactory, and in some cases furnace companies have been given concern over foundry trade credits. This applies particularly to Canadian foundries. On average transactions Buffalo prices have ranged from $12.50 to $13 for No. 2 X, and in eastern Pennsylvania quotations are as low with the average furnace as they have been at any time in the month. Perhaps the extreme prices made by the lowest sellers are not so readily obtainable. In Virginia iron one producer has advanced its price 25 cents, or to $13.25 for No. 2 X at furnace. There is still $13 Virginia iron and something lower than this has been done. We quote Northern iron for tidewater delivery as follows: No. 1 foundry, $14.75 to $15; No. 2 X, $14.25 to $14.75; No. 2 plain, $14 to $14.25. Southern iron is quoted at $15 to $15.25 for No. 1 and $14.75 to $15 for No. 2.

Finished Iron and Steel.—The improved status of business is most positively indicated by the increasing number of inquiries for structural steel projects, of the speculative as well as of the investment sort, and the subjoined list is accordingly presented in addition to similar notations made in increasing numbers in recent weeks. Sellers report better sales and more contracting by manufacturers and jobbers, and everything points to a gradual resumption. It is stated that some railroads have determined on purchases but as of a date a few weeks hence. The fact remains that fabricators are in need of work but the active situation with regard to work in prospect is a decided improvement over what prevailed a few weeks ago. Among new live structural propositions may be mentioned 900 tons for a loft for the Goelet estate, Nineteenth street; 1100 tons for a loft, West Twenty-fourth street, 350 tons for a bridge, Woodbridge, N. J., Public Service Corpora-

tion; 850 tons for a department store, New Haven; 1800 tons for a loft at West Thirty-third street; 500 tons for a department store, New Rochelle, N. Y., and as much as 40,000 tons shortly to be advertised for further subway elevated sections and third tracking of the Brooklyn elevated railroads. The greater activity in placing contracts appears to be continued, as some of the following recent awards indicate: 650 tons, Strathcona Apartment, 155th street, to the Hedden Iron Construction Company; 700 tons for extensions, Oppenheim & Collins, New York, to Levering & Garrigues Company; 500 tons for a synagogue in Newark, to the Harris H. Uris Iron Works and 150 tons for the Straight residence, Fifth avenue, to Post & McCord. Holbrook, Cabot & Rollins Corporation is low bidder for pier work in New York involving 4000 tons of steel piling. It appears that the Dominion Bridge & Iron Company is likely to get the steel work in connection with the Toronto harbor improvements, involving 4000 tons, and American steel may be used. The John H. Parker Company is general contractor for a bank at Lynn, Mass., involving 500 tons. In the railroad car field the Illinois Central has entered the market for 1000 gondolas and the Bangor & Aroostook is inquiring for some 30 cars. The Union Pacific has placed 2000 box, 600 automobile and 400 stock cars with the Pressed Steel Car Company and 2000 box with the American Car & Foundry Company, and it is probable that the Bettendorf Axle Company is to provide the underframes for all. The Delaware, Lackawanna & Western has placed 10 passenger with the Pullman Company and the Northern Pacific 40 fast service refrigeration cars with the Pressed Steel Car Company. It appears also that two or three weeks ago the Pressed Steel Car Company took 200 tank cars for the Santa Fe. We quote mill shipments of steel bars at 1.20c., Pittsburgh, or 1.36c., New York; plates and plain structural material at 1.20c. to 1.25c., Pittsburgh, or 1.36c. to 1.41c., New York; iron bars, 1.25c. to 1.35c., New York. We quote iron and steel bars from store, 1.90c. to 1.95c., and shapes and plates 1.95c. to 2c.

Ferroalloys.—A sharp reduction of $5 per ton is announced by the producers of English 80 per cent. ferromanganese, bringing the price to $40, Baltimore. On this basis a number of sales are reported in lots of 100 to 600 tons, and general inquiry has been stimulated. The opinion is expressed that, since the price of $40 is considerably below the 10-year average, the bottom has been reached and a buying movement is looked for before long. Ferrosilicon continues quiet, with the regular amount of business being done. Quotations stand at $73, Pittsburgh, for carloads; $72 for 100 tons, and $71 for 600 tons and over.

Cast-Iron Pipe.—The volume of business is steadily increasing. Quite a number of municipalities are now getting into the market and some of them are buying considerable quantities. The city of Boston will open bids February 9 on 3550 tons of 6 to 20 in. and on 200 tons of specials. It is the largest letting now in sight in Eastern territory. The New York Board of Water Supply announces that the lowest bidder for the 36-in. cast-iron tube known as the Narrows siphon, which will carry the water from the Catskill Aqueduct to Staten Island, was the Merritt-Chapman Derrick & Wrecking Company, whose bid was $996,862.75. Inquiries from private buyers are coming out in good force and considerable business is being entered of this character. The foundries are improving their position to such an extent that prices are slowly hardening. Carload lots of 6 in., however, are still to be had at $22 to $23, per net ton, tidewater.

Old Material.—Although the local demand for scrap has not appreciably grown, the market has a very strong tendency. This is due to the heavy movement from Eastern stocks of scrap to consuming points in the West. As a consequence, the supply of scrap is getting considerably shorter in the East. It is expected that, with the strength now shown in the market before the closing of railroad lists shortly due, much greater strength will be experienced after their disposal. Dealers' quotations have been advanced and are now as follows, per gross ton, New York:

Old girder and T rails for melting	$9.00 to	$9.50
Heavy melting steel scrap	9.00 to	9.50
Relaying rails	21.50 to	22.00
Rerolling rails	11.00 to	11.50
Iron car axles	19.50 to	20.00
Steel car axles	13.50 to	14.00
No. 1 railroad wrought	11.50 to	12.00
Wrought iron track scrap	10.00 to	10.50
No. 1 yard wrought, long	9.50 to	10.00
No. 1 yard wrought, short	8.75 to	9.25
Light iron	4.00 to	4.50
Cast borings	6.50 to	7.00
Wrought turnings	6.50 to	7.00
Wrought pipe	8.75 to	9.25
Carwheels	12.00 to	12.50
No. 1 heavy cast, broken up	11.50 to	12.00
Stove plate	8.50 to	9.00
Locomotive grate bars	7.50 to	8.00
Malleable cast	8.00 to	8.50

Metal Market

NEW YORK, January 28, 1914.

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York			Lead		Spelter	
Jan.	Lake	Electrolytic	Tin, New York	New York	St. Louis	New York	St. Louis
22	14.75	14.37½	38.80	4.10	3.97½	5.25	5.10
23	14.87½	14.50	38.20	4.10	4.00	5.25	5.10
24	14.87½	14.50	38.35	4.10	4.02½	5.25	5.10
26	15.00	14.50	39.00	4.10	4.02½	5.30	5.15
27	15.00	14.50	39.25	4.10	4.02½	5.35	5.20
28	15.00	14.50	39.12½	4.10	4.02½	5.35	5.20

Copper quotations are higher. In tin there has been excellent buying and the market has advanced. Lead has been active and higher prices seem probable. Spelter advanced about 10 points following a better demand. Antimony is quiet and unchanged.

New York

Copper.—In electrolytic there has been fair activity, especially for export. Domestic consumers have not been as eager to get the metal as they were in the previous week, but a much better tone prevails and quotations have advanced to 14.50c., cash, New York, although shopping might disclose metal a very few points lower. At the same time there are few resale or speculative lots being offered, holders evidently expecting to realize the full price. Lake continues normal and sentimentally stronger at 15c. The quotations in London to-day are £65 12s. 6d. for spot and £65 17s. 6d. for futures. Exports this month have been heavy, amounting to 30,349 tons.

Tin.—Activity has prevailed, especially in the latter part of last week and some liberal tonnages have been taken by both consumers and dealers, with deliveries ranging from spot to next June. The majority of the buying was by consumers. While the market has advanced, the quotation to-day being 39.12½c., it has been rather erratic. The buying began late on January 21, when about 300 tons was taken. Thursday was rather quiet again, but on Friday transactions were active with dealers as the buyers and on Saturday there was a continuance of the demand, with consumers buying as well. On these two days between 600 and 800 tons was taken, most of the deals being closed quietly and usually between 5 and 6 o'clock in the afternoon. On Monday there was a good inquiry for futures, but not many purchases. Yesterday the market was upset by the sale of 80 tons on the floor of the New York Metal Exchange, when 39.05c. to 39.12½c. was realized for February, 39c. to 39.10c. for March and 39c. for April, prices which were equal to London quotations, and made no allowances for freight. The quotations in London to-day are £177 15s. for spot and £179 for futures. Arrivals this month total 3225 tons and there is afloat 1430 tons. The sale of Banca tin to-day in Rotterdam, Holland, realized 107⅝ florins, equal to 39.25c., c.i.f. New York.

Lead.—The market has been active, with especially heavy sales on Friday and Saturday, when the metal was taken by both consumers and dealers, all of which has made the market much firmer. St. Louis at 4.02½c. to-day is relatively higher than New York where the quotation is 4.10c. and an advance is expected at any

moment. The price of lead in London has declined in the last few days, but this has had no effect on the market here so far.

Spelter.—After fair buying the market has become quiet, but it is firm at higher quotations, those of to-day being 5.35c. to 5.45c., New York, and 5.20c. to 5.30c., St. Louis. The advance started on Monday.

Antimony.—Quiet prevails, with prices unchanged at 7c. to 7.12½c. for Hallett's, 7.30c. to 7.40c. for Cookson's and 6c. to 6.50c. for Chinese and Hungarian grades.

Old Metals.—The market is quite firm and dealers have advanced selling prices as follows:

	Cents per lb.
Copper, heavy and crucible	14.00 to 14.25
Copper, heavy and wire	13.50 to 13.75
Copper, light and bottoms	12.50 to 12.75
Brass, heavy	8.75 to 9.00
Brass, light	7.50 to 7.75
Heavy machine composition	12.00 to 12.25
Clean brass turnings	8.50 to 8.75
Composition turnings	11.00 to 11.50
Lead, heavy	3.90
Lead, tea	3.65
Zinc, scrap	4.10

St. Louis

JANUARY 26.—Lead firmed up during the week, but gained comparatively little in price, closing to-day firm at 4c.; spelter was also stronger, closing to-day firm at 5.10c. to 5.15c.; tin is easy at 38.50c. to 38.75c.; Lake copper, nominal, at 15.35c.; electrolytic copper, firm at 14.95c. to 15.10c.; Cookson's antimony, dull, at 7.65c. to 7.75c. In the Joplin ore market there was a generally weaker tone, though at the end there was a better feeling. The best price realized for zinc blende was $43 per ton, while the basis range for 60 per cent. was $37 to $41. Calamine was $20 to $21 for 40 per cent., with premium grades selling as high as $25. Lead ore remained unchanged, selling through the week at $50. We quote miscellaneous scrap metals as follows: Light brass, 4.50c.; heavy yellow brass, 7c.; heavy red brass and light copper, 8.50c.; heavy copper and copper wire, 9.50c.; zinc, 2.75c.; lead, 3c.; pewter, 22c.; tinfoil, 27c.; tea lead, 2.75c.

Chicago

JANUARY 26.—A well supported buying of copper metal for delivery abroad has contributed an upward tendency to the values of both casting and Lake copper, although there is scarcely a quotable change. Higher quotations for tin are more pronounced. Spelter also is quoted at a sharp advance. A recession in the price of zinc, brought about it is understood to meet foreign competition under the new tariff schedules, is noted below: We quote as follows: Casting copper, 14.50c. to 14.75c.; Lake copper, 15c., for prompt shipment; small lots, ¼c. to ⅛c. higher; pig tin, carloads, 39.75c.; small lots, 41.75c.; lead, desilverized, 4.05c., and corroding, 4.35c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.25c. to 5.30c.; Cookson's antimony, 9.50c.; other grades, 8c.; sheet zinc, $7.25, f.o.b. La Salle or Peru, Ill., less 8 per cent. discount in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 11.50c.; copper bottoms, 10.25c.; copper clips, 11c.; red brass, 10.75c.; yellow brass, 8c.; lead pipe, 3.50c.; zinc, 3.75c.; pewter, No. 1, 23c.; tin foil, 28c.; block tin pipe, 31c.

The Warner & Swasey Company, Cleveland, Ohio, has received an order from the Board of Education, Oakland, Cal., for a 20-in. refracting telescope, which it is said will be the largest designed for public use in the world. It will be installed at the Chabot Observatory in Oakland. It will be completed early in 1915 and will be on exhibit at the Panama-Pacific Exposition.

The malleable annealing room of the Pratt & Letchworth Company, Buffalo, N. Y., was partly destroyed by fire Sunday, January 25. Fortunately the ovens in one tier were so constructed that they remain intact and this will enable the company to continue business without interruption and fill all orders promptly.

Iron and Industrial Stocks

NEW YORK, January 28, 1914.

All the stock exchanges showed great activity and steadily rising prices for the whole of the period since last report. The President's message was accepted as indicating a better spirit toward business interests and the news from industrial markets was also of a character to inject strength into securities. The advances made in some stocks were quite large. Marked exceptions to the advances were observed in the stocks of the M. Rumely Company and J. I. Case Threshing Machine Company, which sharply receded. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chal., com.	11½ - 13⅜	Nat. En. & St., com.	13¼ - 13⅞
Allis-Chal., pref.	45 - 49	Pressed St'l., com.	32 - 35⅝
Am. Can, com.	33½ - 35⅛	Pressed St'l, pref.	101
Am. Can, pref.	94½ - 96	Ry. Spring, com.	27¾ - 31½
Am. Car & Fdry., com.	48 - 50⅝	Republic, com.	24 - 27
Am. Car & Fdry., pref.	115 - 116	Republic, pref.	86½ - 89¾
Am. Loco., com.	35 - 36½	Rumely Co., com.	15¼ - 16⅞
Am. Loco., pref.	100 - 101⅛	Rumely Co., pref.	34¼ - 38
Am. St'l Fdries.	34 - 35½	Sloss, com.	32½ - 35
Bald. Loco., com.	44¼ - 45½	Pipe, com.	12 - 13½
Bald. Loco., pref.	104 - 104½	Pipe, pref.	45 - 46½
Beth. Steel, com.	36½ - 38¼	U. S. Steel, com.	63⅞ - 66⅞
Beth. Steel, pref.	76 - 77½	U. S. Steel, pref.	109 - 112½
Case (J.I.), pref.	90 - 93¾	Va. I. C. & Coke	45 - 49½
Colorado Fuel	32½ - 34	Westingh'se Elec.	68¼ - 71⅝
Deere & Co., pref.	98½ - 98⅝	Am. Ship, pref.	85 - 88
General Electric	146 - 148⅛	Chic. Pneu. Tool	53 - 55
G. N. Ore Cert.	38 - 39	Cambria Steel	50 - 51⅞
Int. Harv., com.	109⅛ - 113½	Lake Sup. Corp.	22½ - 23
Int. Harv., pref.	116	Pa. Steel, pref.	61½ - 62
Int. Harv., Corp.	108⅝ - 112	Warwick	10½
Int. Harv., Corp., pref.	115 - 116	Cruc. Steel, com.	15⅝ - 16⅞
Int. Pump, com.	9¼ - 9⅞	Cruc. Steel, pref.	92 - 95
Int. Pump, pref.	26	La Belle Iron, com.	43 - 44¼
Lackawanna St'l	35 - 40	La Belle Iron, pref.	120½

Dividends Declared

The United States Steel Corporation, regular quarterly, 1¾ per cent. on the preferred stock, payable February 27, and 1¼ per cent. on the common stock, payable March 30.

The Lackawanna Steel Company, regular quarterly, 1¾ per cent. on the preferred stock, payable March 2.

The Standard Sanitary Mfg. Company, regular quarterly, 1¾ per cent., on the preferred stock and 1½ per cent. on the common stock, both payable forthwith.

Central Scrap Iron Association Organized

At a meeting held in the Hotel Henry, Pittsburgh, January 20, the Central Scrap Iron Association was organized. Officers were elected as follows: John C. Bole, Pittsburgh, president; I. J. Streng, Pittsburgh, secretary; William Wilkoff, Youngstown, Ohio, treasurer. Vice-presidents were named as follows: H. Summers, Columbus, Ohio; E. A. Schwarzenberg, Cleveland, Ohio; H. S. Grant, Detroit, Mich.; S. Morrison, Buffalo, N. Y., and William Hilb, Cincinnati, Ohio. The directors are: I. Wilkoff, Youngstown, Ohio; A. J. Bialosky, Cleveland, Ohio; L. Hurwitz, Syracuse, N. Y.; Elmer Gerson, Toledo, Ohio, and J. B. Jones, Pittsburgh. A committee was empowered to draft a constitution, by-laws, etc., and fix the date of the next meeting.

The following concerns were represented: John C. Bole Company, Charles Dreifus & Co., Hausman & Wimmer Company, J. B. Jones & Co., C. Davis & Co., Pennsylvania Iron & Steel Company, M. Streng's Sons Company, all of Pittsburgh; Bialosky Bros. & Co., A. Rotter, E. A. Schwarzenberg, all of Cleveland, Ohio; Grant Iron & Metal Company, Detroit; Sharon Iron & Metal Company, Sharon, Pa.; H. Zeiger & Co., Columbus, Ohio; Wilkoff Brothers Company and Wilkoff Iron & Steel Company, both of Youngstown, Ohio.

The Central Scrap Iron Association means to embrace all leading scrap iron and steel concerns shipping material into the Pittsburgh and Ohio districts. Its purpose, as duly set forth, is to promote a more friendly feeling among the trade, and to co-operate for general improvement of conditions in the iron and steel scrap business. It is stated that three of the leading scrap concerns in the Pittsburgh district have so far refused to be identified with the new association.

Pittsburgh and Valleys Business Notes

The C & C Electric & Mfg. Company has discontinued its office at 421 First avenue, Pittsburgh, in charge of Ludwig Hommel & Co., and the territory will be cared for in the future by J. C. Chamberlain, Philadelphia manager.

The Follansbee Brothers Company, Pittsburgh, is now installing in its open-hearth steel plant at Follansbee, W. Va., a new reversing sheet bar mill, built by the National Roll & Foundry Company, Avonmore, Pa., and a new blooming mill engine built by the Mesta Machine Company, Pittsburgh. The mill and engine were bought some time ago.

The Westinghouse Electric & Mfg. Company, East Pittsburgh, has made a contract with the city of Boston for all the machines and equipment for a central high pressure fire pumping station. The contract includes six six-stage centrifugal pumps, six 700 hp. induction motors, six 800 hp. induction motors, complete switchboard and controlling apparatus, also the necessary traveling cranes and all heavy piping and large valves for the complete equipment of the station. The pumps have a capacity of 3000 gal. per min.

At the monthly meeting of the Pittsburgh Foundrymen's Association to be held on Monday evening, February 9, it is expected that an address will be made by Stuart L. Dean, Dean Steam Pump Works, Indianapolis, Ind., on "Making the Foundry Pay Dividends."

The annual banquet of the Engineers' Society of Western Pennsylvania will be held in the Hotel Schenley, Pittsburgh, on Friday evening, February 6. The toastmaster will be James A. Dodges, of Philadelphia, an honorary member of the society. The speakers announced are Major-General Leonard Wood, chief of staff of the army; Rear Admiral Staunton, of the Navy, and Alfred H. Smith, president of the New York Central Lines.

Last week the United Engineering & Foundry Company, Pittsburgh, shipped the last consignment of castings on its contract for general operating chain equipment for the Panama Canal.

The Chester B. Albree Iron Works Company, Pittsburgh, has received an order for the fabrication of 4000 ft. of railing for the new Bloomfield bridge in Pittsburgh, and 2000 ft. for a bridge at Brownsville, Pa., both bridges to be erected by the Fort Pitt Bridge Works, Pittsburgh; also an order from the Penn Bridge Company, Beaver Falls, for 2000 ft. of railing for a bridge at Pittston, Pa.

All the finishing mills of the Republic Iron & Steel Company at Youngstown, Ohio, are now in practically full operation. Two blast furnaces of the company in Youngstown are idle, these being the Hannah and No. 4 stack at Haselton.

The report that the Allegheny Steel Company will make improvements to its plant at Brackenridge, Pa., to cost $175,000 to $200,000, is premature. It has under consideration some additions to equipment, but nothing has yet been settled. The company operates an open-hearth steel plant and has long had in contemplation the building of a blast furnace, but a definite decision has not been reached.

The Westinghouse Machine Company, East Pittsburgh, recently received contracts for marine gears for the U. S. torpedo boat destroyer tender Melville and for the cruising gears of the battleship Pennsylvania and battleship No. 39. The advantages of the Westinghouse floating frame for automatically maintaining the alignment of the pinions and gear and equalization of the tooth pressures and the compensation of the torsional deflection are rapidly becoming known by engineers and has resulted in many orders for gears, there now being over 50,000 hp. under construction and over 50,000 hp. in operation.

The Fitzsimons Company, Youngstown, Ohio, manufacturer of cold-drawn steel shafting, has opened an office in room 614 Fulton Building, Pittsburgh, with J. A. Simonton district sales manager.

The statement that William Swindell & Brother, engineers and contractors, Pittsburgh, had built the two open-hearth furnaces in the plant of the West Penn Steel Company at Brackenridge, Pa., and had received a contract for a third 100-ton furnace is incorrect. The two 100-ton furnaces now in this plant were built by the S. R. Smythe Company, Pittsburgh, which has also received the contract for the new 100-ton furnace to be added.

Bids will be received by the Commissioners of Jefferson County, Steubenville, Ohio, until February 3 for the construction of water supply system.

T. E. Billquist, Vandergrift Building, Pittsburgh, architect for the erection of the new Elizabeth Steel Magee hospital in that city, has placed a contract with the McGinnes Company, Pittsburgh, for the heating system. The installation will include three 150 hp. return tubular boilers to be operated by Murphy stokers, made by the Murphy Iron Works, Detroit, Mich. This heating contract is one of the largest placed in the Pittsburgh district for some time.

The Washington Tin Plate Company, Washington, Pa., has filed a notice to increase its debt to the amount of $200,000.

The labor troubles which have existed for several months in the building trades at Pittsburgh between master and journeymen steam fitters, have been settled by arbitration. The contract to be entered upon is for three years. Steamfitters will receive $5 a day until December 31, 1915, with an increase of 50c a day for 1916. The wages of the steamfitters' helpers will be $3 a day for the entire term.

Wallace H. Rowe, president, acting for the Pittsburgh Steel Company, Pittsburgh, has taken title to 1185 acres of coal lands in Cumberland Township, Washington County, Pa.

The James Rees & Sons Company, Pittsburgh, has received a contract to build an all-steel excursion steamboat, to cost about $80,000, for the West Memphis Packet Company, to operate from Memphis, Tenn. The boat will be as nearly fireproof as it is possible to build it. The contract calls for the delivery of the vessel at Memphis, Tenn., about August 1.

The Jamison Coal & Coke Company, Oliver Building, Pittsburgh, has appointed Rogers, Brown & Co. exclusive selling agents for its coke in New England.

The Pittsburgh Steel Products Company, a subsidiary of the Pittsburgh Steel Company, Pittsburgh, has opened offices in room 1933 Railway Exchange Building, Chicago, in charge of A. F. McCoole, manager of sales, and C. F. Palmer, supervisor.

The Sons of Vulcan has called off the strike at the puddling plant of the Youngstown Sheet & Tube Company, East Youngstown, Ohio, and the strikers are now trying to get back their old positions.

The Tiffany-Vogel Company, which recently succeeded the Bassett-Vogel Company, Pittsburgh, has entered the machinery field and is now representing in the Pittsburgh district the National Twist Drill & Tool Company and the Bay State Tap & Die Company. G. B. Tiffany, for many years connected with the hardware trade, is head of the new company.

At the annual meeting of stockholders of the United States Stamping Company, Moundsville, W. Va., the directors were re-elected as follows: J. M. Sanders, R. M. Gilleland and F. H. Blake, all of Moundsville, and A. M. Schenk, H. E. Vance, E. L. Stone and H. C. Ogden, all of Wheeling. Work on the new stamping building is being rushed, and it is expected to be ready for occupancy next month.

The annual meeting of the Engineers' Society of Western Pennsylvania was held in the Oliver Building, Pittsburgh, last week,and officers were elected as follows: A. R. Raymer, president; Samuel E. Duff, vice-president; Elmer K. Hiles, secretary; A. E. Frost, treasurer; new directors, George H. Neilson and Fred Crabtree. An increase of membership to 1124 was shown. The subject of the address of Samuel A. Taylor, retiring president, was "The Advancement of Bituminous Coal Mining." It was illustrated with lantern slides and sketched the development of coal mining methods from 40 years ago, when there was no machinery, to the present day.

No. 7 blast furnace of the Cambria Steel Company, Johnstown, Pa., which has been idle for relining and repairing, is about ready to be blown in. One other stack at Johnstown has been blown out. At present the company is operating six of its eight furnaces.

Work has been started on the enlargement of the shops of the Bessemer & Lake Erie Railroad at Greenville, Pa. It is stated that about $300,000 will be spent in this work and in the installation of new equipment.

The blooming mill in the new open-hearth steel plant of the Brier Hill Steel Company, Youngstown, Ohio, was put in successful operation last week. This plant is now regularly producing billets and sheet bars. Part of the output of sheet bars will be sold in the open market, but most will be used in the sheet mills of the company in the Youngstown district.

The Republic Chemical Company, Inc., Pittsburgh, was forced into a receivership in July, 1913, owing to a combination of unfortunate circumstances: It was delayed five months in getting its plant started, which resulted in an accumulation of tin scrap at high prices; a six months' strike in the silk dyeing industry shut off the demand for tetra-chloride, which is the principal product of the company; the stagnation in the tin scrap market made it impossible to sell detinned billets unless at a great reduction in prices; finally the First-Second National Bank of Pittsburgh, in which the company carried its account, failed. Under orders of the court, the plant was kept in operation, and in the meantime a successful effort was made to rehabilitate the company. Some of the stockholders provided new money to the extent of $300,000, and a plan of settlement submitted to the creditors was accepted. The plan was approved by the court on January 9, the receivers were discharged and the business was turned over to the Republic Chemical Company. Improvements and additions are now being rapidly made in order to bring the plant up to the highest degree of efficiency. The company has already sold the larger part of its output for this year, and, with the new working capital that has been furnished, it regards the outlook for the future as most promising.

Canadian Venezuelan Ore Company

A reorganization of the Canadian Venezuelan Ore Company, which operates an iron mine in the Imataca district of Venezuela, has recently been under consideration at Montreal, where the company's main office is located. In the past year some 50,000 tons of ore was shipped to the Alan Wood Iron & Steel Company furnaces at Swedeland, Pa. Latest shipments had shown some deterioration in the quality of the ore as mining proceeded. The bondholders met in Montreal last week and appointed a committee to decide upon a plan of action. Frank P. Jones, of the Canada Cement Company, is president of the company, and H. L. Doble secretary and treasurer. The directorate includes Sir William C. Van Horne, Sir W. Max Aitken, G. M. Bosworth, H. S. Holt, J. D. Patterson, W. D. Rose, G. F. Pearson and A. R. Doble. The bondholders at the meeting referred to passed a resolution asking their committee to serve the trustee for the bondholders, the New York Trust Company, with notice of the default on the bond coupons due January 1. By the trust deed the property would revert to the bondholders 60 days after the serving of the above notice, unless arrangements should be made by the company to pay overdue interest. Foreclosure proceedings cannot be taken until 60 days have expired. At the end of three weeks a further meeting will be held, when definite action will probably be taken. Shipments of ore to the United States were suspended some weeks ago. It is stated that the company has been hampered in mining operations by labor conditions. Its agreement with the Venezuelan government calls for the payment of 20 cents a ton royalty. Outstanding stock of the company is $4,347,500 and there are $1,000,000 of first mortgage 15-year 6 per cent. gold bonds.

The Ashland Steel Company, Ashland, Ky., resumed operations in all departments on Monday, January 19. It has not installed a bar mill, but has arranged to roll sheet bars on the rod-mill continuous train.

STEEL CORPORATION EARNINGS IN 1913

Total for 1913 Was $137,133,363, Against $103,178,307 in 1912

The statement of its earnings for the last quarter of 1913, just issued by the United States Steel Corporation, enables approximate figures for its total earnings of the year to be made up. Adding the results of the last quarter to those given for the previous quarter, the total is $137,133,363, showing an increase of $28,955,056 on the earnings of 1912. The figures for 1913 may be changed slightly upon completion of the audit of accounts for the year. The quarterly statement of earnings given below compares the last quarter of 1913 with the last quarter of 1912:

	1913	1912
October earnings	$11,430,461	$12,485,412
November earnings	7,392,166	11,120,749
December earnings	4,213,722	11,579,396
Total earnings after deducting all expenses incident to operations, including those for ordinary repairs and maintenance of plants and interest on bonds of the subsidiary companies	$23,036,349	$35,185,557
Less charges and allowances for depreciation:		
Sinking funds on bonds of subsidiary companies and depreciation and extraordinary replacement funds	4,067,791	7,786,216
Sinking funds on U. S. Steel Corporation bonds	1,704,933	1,634,415
Net income	$17,263,625	$25,764,926
Deduct interest for the quarter on U. S. Steel Corporation bonds outstanding	5,607,227	5,677,547
Balance	$11,656,398	$20,087,379
Dividends for the quarter on stocks of the U. S. Steel Corporation:		
Preferred, 1¾ per cent.	$6,304,920	$6,304,920
Common, 1¼ per cent.	6,353,782	6,353,782
Deficit for the quarter	$1,002,304	*$7,410,979
Surplus for previous quarters in the year	32,337,743	†3,800,850
Surplus for the year	$31,335,439	$3,610,129
Less net balance of sundry charges and receipts, including adjustments of inventories and various other accounts	796,224	17,698
Balance	$30,539,215	$3,592,431
Less, appropriated from surplus for account of expenditures made and to be made on authorized appropriations for additional property, new plants and construction	15,000,000	.....
Balance of surplus for the year carried forward	$15,539,215	$3,592,431

*Surplus.
†Deficit.

The showing for 1913 is considerably better than for 1912, the increase in surplus for the year being $11,946,784. The decided falling off in December earnings accounts for the deficit in the last quarter.

The W. A. Jones Foundry & Machine Company, Chicago, the well-known manufacturer of transmission machinery, whose plant has been located on the north side for many years, has purchased a tract of 26 acres at West Twelfth street and South Forty-fourth avenue, on which it will build a much larger plant. Drawings for the first group of buildings, the estimated cost of which will be $300,000, are now being completed. It is understood that the complete project represents an outlay that will reach $1,000,000.

The report that the foundry of the William Tod Company, Youngstown, Ohio, had been seriously damaged by an explosion, is incorrect. The only damage incurred was to the windows of the foundry building, the loss not exceeding $1000. There will be no interruption whatever in the operation of the foundry.

Obituary

WILLIAM COOPER, director of buildings and equipment of the East Pittsburgh works of the Westinghouse Electric & Mfg. Company, died from peritonitis at his home in Wilkinsburg, Pa., January 23, aged 52 years. He was born near Watertown, N. Y., attended Cornell University and began his business career with a cheese manufacturing concern, at which time he had charge of the power plant. At the age of 25 he went to Ottumwa, Iowa, to engage in the building of automatic screw machines. Soon after he started a shop in Minneapolis for himself, undertaking at this time the development of a system of traction using compressed air. This work led, among other things, to the investigation of the hydraulic speed changing gear which is recognized as an exceedingly accurate and efficient device. This is now manufactured by the Waterbury Tool Company, Waterbury, Conn., and is used for moving the turrets on battle ships. After four years with the Twin City Rapid Transit Company, Minneapolis, as master mechanic and chief engineer; three years with the General Electric Company at Schenectady, a short time with Blood & Hale, consulting engineers, Boston, and six years with the Bullock Electric & Mfg. Company, Cincinnati, Ohio, as general superintendent, he spent a year as consulting engineer in Cincinnati, and in 1904 entered the employ of the Westinghouse Electric & Mfg. Company. His work in the railroad field consisted of an active participation in the design and manufacture of the equipment furnished the New York, New Haven & Hartford, the Pennsylvania, and other roads which have been electrified by the Westinghouse Company. He did some excellent work in remodeling the power plant at East Pittsburgh, leaving it in fine condition.

JOHN P. COLLINS, general superintendent of the city blast furnaces of the Carnegie Steel Company at Pittsburgh, embracing the Isabella, Lucy, Neville and Edith, died after an operation in the Allegheny General Hospital, North Side, Pittsburgh, January 14. He was born in Pittsburgh, May 14, 1869, and was educated in the Pittsburgh public schools, graduating from the high school. He was employed in the Pittsburgh postoffice from 1887 to 1891, after which he accepted a position with the Carnegie Steel Company at the Lucy furnace plant, Fifty-first street. He was made assistant superintendent of Lucy furnaces in 1900, was advanced to assistant general superintendent of the city furnaces, and about a year ago, on the retirement of James Scott, he was promoted to the position he held at the time of his death. As a blast-furnace operator Mr. Collins made an enviable record, having been one of the most successful men in his line in the country. He was particularly prominent in the development of the Gayley dry blast process which was first installed at the Isabella furnaces, and also in the development of the thin-lined blast furnace. He was a member of the American Institute of Mining Engineers, American Iron and Steel Institute, Engineers' Society of Western Pennsylvania, Oakmont and Stanton Heights golf clubs, Pittsburgh Athletic Association and the Elks. He leaves a widow.

ELIPHALET WICKES BLATCHFORD, founder of E. W. Blatchford & Co., lead pipe manufacturers, 230 North Clinton street, Chicago, and one of the city's oldest residents, died January 25, aged 83 years. He was born in Stillwater, N. Y., went to Chicago as a boy, and was educated at the Illinois College at Jacksonville, from which he was graduated in 1845. Five years later he went to St. Louis and engaged in the lead and oil industry, and in 1854 returned to Chicago to manage the local office of the business. The firm was subsequently dissolved and that of E. W. Blatchford & Co. started. The business progressed under Mr. Blatchford's able management, and after about 60 years of activity he retired, leaving the management of his affairs to others of his family. He was a member of several exclusive clubs, and from an executive viewpoint was the father of the Newberry and Crerar libraries of Chicago. For years he was head of the board of directors of the Chicago Theological Seminary, and vice-president of the American Board of Foreign Missions of the Congregational Church. His public services began when in 1861 he was made treasurer of the Northwestern branch of the United States Sanitary Commission. Paul Blatchford, his son, is secretary of the Central Supply Association and the Western branch of the National Metal Trades Association.

EDWIN EMERSON NOLAN, head of the materials disposition department of the Westinghouse Electric & Mfg. Company, died at his home in Wilkinsburg, Pa., January 13. He entered the service of the Westinghouse Company in 1887, about the time it began operations on Garrison alley in Pittsburgh. He was subsequently made superintendent of the Allegheny factory of the company, and as such had charge of building the first alternating-current generators for the Niagara Falls hydroelectric plant, an installation which afterward became famous throughout the world. He retained the position until the factory was converted into a foundry. In 1898 he was sent by the Westinghouse Company to France to establish a factory at Havre, where he remained until 1902. In that year he returned to the United States and because of his familiarity with Westinghouse apparatus he was placed in charge of the materials disposition department.

FREDERICK E. WOODBURY, vice-president Newport Mining Company, Milwaukee, Wis., and general manager of the mining, iron, coke and gas interests of Ferdinand Schlesinger, was instantly killed in the Newport mine at Ironwood, Mich., January 21, by a falling skip. He was inspecting the mine for the purpose of estimating repairs. Mr. Woodbury was a graduate of the Massachusetts Institute of Technology and was 50 years old. He joined the Calumet & Hecla Company as mining engineer 22 years ago, resigning in 1902 to become mine manager for the Newport Mining Company. Eight years ago he was transferred to Milwaukee as consulting expert and supervising engineer, and later was elected vice-president.

JOHN C. KELLEY, for 44 years the president of the National Meter Company, 84 Chambers street, New York, died January 24 at his home in Brooklyn, aged 75 years. He was born in Ireland, and his schoolboy days were spent at Palmyra, N. Y. He came to this city in 1860, and in 1870 organized the company of which he continued the head until his death. He was appointed collector of internal revenue for Brooklyn by President Cleveland, and under Mayor Low was vice-president of the Board of Education. He was a director in many companies and held membership in many clubs. He leaves five daughters and two sons.

FRANK X. BRABANT, president Michigan Brass & Foundry Company, Detroit, Mich., died January 23 after an illness of several weeks, aged 54 years. Born in New York, he located in Detroit 20 years ago and soon entered the brass business as secretary and treasurer of the Standard Brass & Mfg. Company, later going to the Michigan Company as its head. He leaves a widow.

ELRIC LYNDE NICHOLS, one of the prominent figures in the business life of northern New York for more than half a century, died January 27 at the home of his son-in-law, ex-Congressman J. M. Wever, in Plattsburgh, aged 93 years. With his partner, the late John W. Lynde, he was a prominent factor in the development of the iron industry of the Saranac Valley.

NEIL W. SNOW, president and general manager Detroit Twist Drill Company, Detroit, Mich., died suddenly January 22, aged 34 years. He was born in Detroit and was prominent in society and club life. Before entering business he was one of the most noted athletes ever produced at the University of Michigan. He leaves a widow and a son.

The C & C Electric & Mfg. Company has discontinued its Pittsburgh office, this territory now being taken care of by the Philadelphia office, of which J. C. Chamberlin is manager. To take care of business in southern Ohio, F. A. Saylor has been appointed agent, with offices in the Greenwood Building, Sixth and Vine streets, Cincinnati.

Personal

E. H. Gary, chairman United States Steel Corporation, left New York January 21 for Miami, Fla., for a stay of several weeks.

Walter S. Chick has been appointed safety engineer of the Pennsylvania Steel Company, Steelton, Pa. He succeeds John R. Brownell, who resigned recently to go to California, where he entered the State service.

F. Herbert Snow, chief engineer of the Pennsylvania Department of Health, has been elected chairman of the Pennsylvania State Engineers' Commission which is to draft a code covering a plan for certificates to engineers engaged in hazardous and extensive public or private work in the State. The commission will make a study of requirements of engineers in this country and abroad and report in time for the Legislature of 1915.

Frank M. Smith has been elected secretary of the Indiana Association of Manufacturers and Commerce, which has its headquarters in Indianapolis. He has been chief clerk for 16 years in the office of the internal revenue collector at Indianapolis.

Fred C. Stevens has been engaged by the Allied Machinery Company of America as a field engineer and demonstrator. Mr. Stevens, who was formerly connected with the Boulevard Machine Company, New York, is now visiting the factories which are represented in Europe by the Allied Machinery Company and will sail February 4. He is known in the trade as an expert in the operation of machine tools and in the production of gears especially.

H. L. Terwilliger, who has been for some time in Los Angeles, has been named president of Harron, Rickard & McCone, machinery merchants, San Francisco, Cal., succeeding the late J. O. Harron. H. G. Mitchell, who has been secretary, has taken the office of vice-president. Boyd Nixon, who has been in charge of the machine tool sales of this house, has resigned, and will leave February 1 for the East.

H. H. Robertson, president Asbestos Protected Metal Company, Beaver Falls, Pa., has been elected vice-president of the Pittsburgh branch of the National Council for Industrial Safety.

A. J. Lindemann, president A. J. Lindemann & Hoverson Company, Milwaukee, Wis., was elected president of the Workmen's Compensation Mutual Liability Insurance Company of Milwaukee at the annual meeting. Other metal tradesmen of Milwaukee elected to offices are: Vice-presidents, J. W. Suetterle, Loeffelholz & Co., and Albert E. Martin, Central Foundry Company; treasurer, Louis Hoffman, Hoffman & Bauer; directors, Frederick L. Sivyer, Northwestern Malleable Iron and Sivyer Steel Casting companies; Henry Harnischfeger, Pawling & Harnischfeger Company; William C. Frye, Chain Belt Company; Robert T. Haselwood, Rundle Mfg. Company. The company, which is ten months old, has issued 160 policies to employers, covering 4500 workmen, and acquired more than 30 per cent. on earned premiums.

Dorsey A. Lyon, Pittsburgh, Pa., has been appointed chairman of the Committee on Electrometallurgy of Iron and Steel of the American Electrochemical Society.

A. Reiche, general manager of the Orenstein-Arthur Koppel Company, Koppel, Pa., has severed his connection with that company and sailed for Germany January 14. He has been succeeded by Erich Joseph, formerly New York manager of the company. Under the supervision of Mr. Reiche, the plant has grown to be one of the largest and best equipped of its kind, and numerous branch offices in the United States and in the West Indies have been established. He goes to Germany to assume the position of managing director of a large concern manufacturing locomobiles and agricultural machinery. Mr. Joseph has been connected with the Orenstein-Arthur Koppel Company for many years.

Llewellyn W. Jones, vice-president in charge of production and manufacture of the Taylor-Wharton Iron & Steel Company, High Bridge, N. J., and its allied interests, has resigned to enter other business.

Dr. K. F. Stahl has opened an office and laboratory at Fifty-seventh street and Allegheny Valley Railway, Pittsburgh, and will pay special attention to installing processes for the economical use of acids for pickling metals, utilization or recovery of waste products, etc.

H. V. Kelly has been elected secretary of the Falcon Bronze Company, Youngstown, Ohio, to succeed the late Joseph G. Haney.

A. E. Coburn, formerly connected with the Temple Pump Company, Chicago, has been appointed advertising manager of the Cleveland Twist Drill Company, Cleveland, Ohio, succeeding W. C. Wick, who resigned to become connected with the export sales department of the Ferro Foundry & Machine Company, Cleveland.

William Miller, who has been associated for the past 37 years with Henry Disston & Sons, Inc., Philadelphia—five years of which, 1908 to 1913, as secretary, succeeding Samuel Disston—has severed his connection with that company and has engaged with the Simonds Mfg. Company, Fitchburg, Mass.

The Moller & Schumann Company, varnishes, enamels and japans, Brooklyn, N. Y., has increased its selling staff by the addition of the following: George W. Gates, Chicago, has been added to the staff in that city; J. Edward Upham, for many years with Berry Bros. in eastern Massachusetts, succeeds W. I. Kelley in that territory; Joseph Pfeffer, for many years with the F. W. Thurston Company, will cover southern Ohio and southern Indiana, with headquarters in Cincinnati.

John H. Davis, formerly superintendent of the Otis Steel Company, and who resigned as general manager of the Standard Steel Castings Company, Cleveland, Ohio, the latter part of December, sailed from San Francisco, Cal., on January 13, for Sydney, Australia. He expects to return to Cleveland about April 1.

Cincinnati Sheet Metal Club Formed

The Cincinnati Sheet Metal Club was formally organized at the Business Men's Club, Cincinnati, Ohio, on the evening of January 19, with an initial membership of 35. The formation of the club was for the purpose of arranging for the entertainment of the National Association of Master Sheet Metal Contractors, whose annual convention will be held in Cincinnati in the second week of June. The officers are as follows: President, E. W. Edwards; secretary, Ferd. F. Verges; assistant secretary, C. L. Smith; treasurer, Charles F. Pfau. The chairman of the publicity committee is G. D. Myers. At the suggestion of President Edwards the naming of other committees was deferred until the next meeting, which will take place shortly. A number of members suggested that the club be made a permanent organization, and this will come up for decision.

Trying to Start a Texas Furnace

Our Austin correspondent states that the Texas Iron Association, which has leased the State's blast furnace at Rusk, has expended $30,000 in repairing the plant, and intends to start operations at once if lower freight rates on iron ore are granted by the Texas Railroad Commission. Judge H. F. O'Neal, of Cass County, Texas, representing the association, informed the commission that it has acquired 11,000 acres with over 40,000,000 tons of high-grade ore and is still acquiring lands. A rate of 57c. per ton from Richey's Spur, Cass County, to the furnace has been requested. Judge O'Neal claimed that it now costs $8.39 in transportation charges to produce a ton of pig iron at Rusk, which is prohibitory.

The Mt. Union Silica Brick Company, Mt. Union, Pa., has completed improvements to its plant which have greatly increased its output. In December it turned out over 2,000,000 silica brick, making the greatest month's production in its history. The company has erected a large steel water supply tank, built a fireproof addition, 58 x 62 ft., to its molding room, added five large kilns and replaced its wooden coal trestle with one of steel.

Duty of Carrier to Receive Freight

Facilities Which Must Be Afforded—Apportionment of Cars During Shortage—Remedies of Shipper Against Discrimination—Effect of Reciprocal Demurrage Laws

BY A. L. H. STREET

A foundryman need not sell castings to a railroad company at any price, but the railroad company must carry his castings, not only without discrimination in favor of other shippers as to rates, but without partiality against the foundryman in the matter of furnishing facilities. There is nothing unfair in this want of mutuality of obligation, when it is considered that the foundryman is engaged in a private enterprise in which there is much competition, while a railroad company is a quasi public institution which enjoys a practical monopoly. In accepting a franchise to operate a railroad it makes a continuing offer to the public to serve every person impartially.

A railroad company, as a common carrier of freight is not only bound to serve all shippers without discrimination but is required by law to have sufficient rolling stock to handle all the traffic which it may reasonably foresee will be offered to it. Hence, it is just as much liable in damages for lack of proper facilities as it is for arbitrary refusal to afford them. But a carrier need not keep enough equipment on hand to accommodate an unusual volume of freight, which could not have been foreseen. In such emergencies, however, the railroad company must notify a shipper of any probable delay on account of car shortage when his freight is received; otherwise, the company will not be heard to assert the shortage as an excuse for delay in delivering the shipment. Nor is an unusual volume of business a defense to a claim for failing to furnish a given number of cars at a certain time and place according to contract. Such contract will not be declared invalid as being discriminatory against other shippers, unless it operates to give the particular shipper an undue preference over them. During car shortages cars must be apportioned to the different parts of the carrier's line equitably, and apportionment between shippers must be without discrimination, except that difference in the volume of different shippers' business may be considered.

DUTIES AS TO SWITCHING PRIVILEGES

Although a carrier is not bound to transport freight from one point to another in its yards at every station for the accommodation of shippers, it has been decided by the courts that a railroad company which undertakes to afford switching service must avoid discrimination between shippers, and is liable in damages for refusing to handle a certain manufacturer's carload shipments.

As a general rule, a railroad company can be required to receive and deliver freight on private switch tracks only when required to do so by contract. But if the company maintains a spur for the convenience of shippers located thereon, it is under the same duty to a manufacturer whose establishment is situated along that track as it is under to establishments along the main track.

CARRIER MAY ADOPT REGULATIONS

Although a railroad company's obligation to afford shipping facilities exists independently of statute and of express contract, that obligation being merely enlarged or diminished by statute or specific agreement carriers may make reasonable regulations relating to the receipt of shipments. Thus a railroad company may fix the times and places when and where freight will be received, if such rule is reasonable; and it may refuse to receive freight which is not properly prepared for carriage. Prepayment of freight charges may be demanded, but mere failure of a shipper to tender payment in advance will not excuse a carrier's refusal to receive a shipment. Nor may a railroad company decline to receive freight merely because the shipper is indebted for charges for transportation of, or demurrage on, other shipments, unless it appears that he will probably refuse to pay the charges on the particular shipment, without good cause. A carrier may, also, require demands for cars to be in writing, but cannot justify refusal to furnish a car because the demand therefor was merely oral, where written demand was not insisted upon. But under most, if not all, of the State reciprocal demurrage laws, written demand is essential to preserve the right to recover the statutory penalty for refusal to furnish cars.

Cars furnished in response to a demand therefor must be suitable for the carriage of the freight for which they were ordered, and it is generally held by the courts that a shipper's use of a defective car does not prevent recovery by him for any damages resulting from the defective condition, unless he expressly assumed the risk or selected the car with knowledge of its condition.

REMEDIES AGAINST CARRIER

Broadly stated, a shipper to whom shipping facilities are wrongfully refused has the choice of two legal remedies: He may obtain an order of court in a mandamus suit, compelling the company to furnish the facilities, or he may maintain a claim against the company for damages directly resulting to him on account of such refusal. Most of the courts hold that the measure of damage for wrongful refusal to receive freight is the difference between the market value of the shipment at the proposed destination when it should have arrived there if carried in due course, and its value at the same time at the place where it was offered for transportation, less freight charges. But if the shipper can reduce his damage in any way, as by using other available means of transportation, he must do so, in which case the measure of his recovery will be any increase in the cost of carriage. If a shipper loses profits which he would have made under a contract for resale of the freight at the point to which he attempted to ship it, he may recover the amount of such loss, even though the railroad company did not know of the existence of such contract. If a shipper can show that refusal to furnish him shipping facilities was malicious, he may recover punitive damages.

In most of the States, laws are now in force requiring every railroad company to furnish suitable cars to all persons applying therefor in good faith, within a certain number of days after written application therefor is filed. A per diem penalty

for each car not furnished within the required time is usually prescribed, and may be recovered by an aggrieved shipper in addition to actual damages.

These laws were enacted to insure prompt performance by railroad companies of their duty under the common law to furnish cars, and are generally held not to interfere with the interstate commerce act, nor to be superseded by that act, as to interstate shipments. The State acts, however, are held by the federal Supreme Court to be valid only where they exempt a railroad company from liability for the prescribed penalty in cases where failure to furnish cars within the required time results from a strike, unavoidable accident, etc.

The laws do not extend to voluntary contracts between carriers and shippers; they are intended only to enable a shipper to secure desired cars promptly under penalty. Accordingly, it is held by most of the courts that it is only when a shipper seeks to recover the penalty fixed by a reciprocal demurrage law that he need show that his demand for cars was in writing. But, in seeking to enforce the statutory penalty, one must show that he has complied with all the requirements of the law. Thus it is held by the courts that a written demand that cars be furnished in less time than the railroad company is entitled to under the law will not sustain recovery of the penalty. But loss of right to such recovery, through failure to comply with such requirements, will not affect the shipper's right to recover actual damages sustained by him in a suit brought without regard to the demurrage law.

AGAINST STEEL COMPANIES

Commerce Commission Decides Industrial Railroad Case

WASHINGTON, D. C., January 27, 1914.—The Interstate Commerce Commission to-day handed down a decision in the now famous Industrial Railroad case, in the matter of allowances to short lines of railroads serving industries, in which it is held that the service by line carriers in official classification territory beyond a reasonably convenient point of interchange, between their rails and the tracks of industries with plant railways, is a shipper's service, a part of the industrial operations of the plant, and not a service of transportation; and that the performance of such services by the line carriers without charge in addition to the rate, and the allowances paid by them therefor to industries, or their plant railroads for performing the service for themselves, are "unlawful rebates, in fact and in effect, and give undue and unreasonable preferences and advantages to the industries so favored and work undue and unreasonable prejudice and disvantage to shippers in the same line of business who do not receive any such allowances and who do not receive the benefit of any such services."

The commission further holds that the admission of industrial lines to the benefit of the "modified per diem agreement" results in many cases in a substantial addition to their revenues that accrues directly to the benefit of the industry and is an undue, unreasonable and unlawful preference and advantage to the industry; and that the delivery of a car by a line carrier upon the interchange track is a delivery to the industry itself, and that the elimination of demurrage, under the present practices of the line carriers, as a transportation charge against industries with plant railroads claiming to be common carriers, results in "undue, unreasonable and unlawful preferences and advantages to such industries and works an undue, unreasonable and unlawful prejudice and disadvantage to shippers not enjoying the benefit of such arrangements."

The case was brought to the attention of the Interstate Commerce Commission by a joint committee of the trunk lines and the United States Steel Corporation to determine the question of the legality of the practices above described and with an understanding on the part of all concerned that the rulings of the commission would be complied with without the formality of an order. The decision, therefore, sweeps away a system which is the outgrowth of years and which, according to the commission's finding, has transferred many millions of dollars from the great trunk lines to the big iron and steel producers. A highly significant feature of the decision is the rather caustic comment of the commission that the railroads which have been granting these special concessions to the short lines have so drained their treasuries that they have been obliged to seek the commission's consent to an advance in their freight rates amounting to an average of 5 per cent. It is equally significant, however, that the commission declares its willingness, as soon as the irregularities complained of are corrected, to assume the full responsibility for authorizing such advance in freight rates as may be found to be necessary and fair alike to shippers and carriers.

A Judgment Against Strikers

A law suit, growing out of a strike that took place three years ago at the plant of the Berry Foundry Company, St. Joseph, Mo., has been settled by the Kansas City court of appeals. The company has been awarded a final judgment of $2,000 against the International Molders' Union. The strike arose over the question of replacing days' wages by piece work, a demand by the employees for reinstatement of the old scale being refused. The contest was very bitter and marked by personal violence and intimidation. The defendants attempted to show that they were maltreated while they were trying to prevent others from taking their places, but the presiding judge, James Ellison, in his opinion, states that the primary question the case presents is what did the defendants do and what was their purpose; that "if one sets out to break the law and meets his match we do not see that it helps him out any to show that fact when he is called to account."

Car Wheel Makers' Association

At a recent meeting of the Association of Manufacturers of Chilled Car Wheels officers were elected for the coming year as follows: President, T. A. Griffin, Griffin Car Wheel Company, Chicago; vice-presidents, E. F. Carry, vice-president and general manager American Car & Foundry Company, Chicago; J. A. Kilpatrick, president Albany Car Wheel Company, Albany, N. Y.; secretary and treasurer, George W. Lyndon, Chicago; executive committee, W. C. Arthurs, J. D. Rhodes, S. F. Pryor, F. B. Cooley, C. A. Lindstrom, A. J. Miller and A. G. Wellington. The association is made up of 25 firms and companies which manufacture chilled cast iron carwheels. Recently it secured the first addition to its membership among wheel manufacturers outside of the United States, in the Canadian Pacific Railroad, which is represented by H. H. Vaughan.

The Ajax Mfg. Company, Cleveland, Ohio, has just installed a scrap reclaiming roll in the Baltimore & Ohio Railroad shops at Baltimore. A test of this machine showed that it had a capacity of rolling an average of seven-eighths of a ton of rounds per hour.

The Machinery Markets

The continuance of fair inquiry is observed in most of the important machinery markets, but buying is restrained practically everywhere by a policy of waiting. The tendency to limit expenditures is exemplified by the demand for second-hand machinery in many instances where purchases of new equipment would be made under more normal conditions. In New York the only activity is in second-hand machinery, although scattered inquiry for new machine tools continues to encourage the trade. New England is confident that a gradual improvement has set in. In Philadelphia current orders are small, but prospects indicate a better market. Single tool orders have improved in Cleveland and there is indication of an improvement in sales of this sort. The Cincinnati situation is unchanged except for a decrease in the recent run of small orders and a relatively good business in second-hand tools. In Milwaukee bookings of orders are far under normal, but the volume of inquiry is encouraging. General conditions and the outlook in the Central South are reported as satisfactory. In St. Louis inquiries have increased in number and are coming from a wider radius. The demand for engines, boilers and pumps is good in Birmingham and the situation there is better than it was in the closing months of 1913. Favorable weather conditions have been a stimulus to trade in Texas and both the machinery and tool trades have improved. In the Pacific Northwest the lumber mills are becoming more active and a slight increase in the demand for machinery is a result, but orders for mining machinery are coming from Alaska slowly.

New York

NEW YORK, January 28, 1914.

The situation of the local trade is one of waiting and watching, probable purchasers doing the waiting and would-be sellers the watching. Small and scattered inquiries continue to appear, but few of them have resulted in sales. This is true of small specialties as well as large machines. The only activity is in second-hand machinery, fair sales of which continue to be made. This is not encouraging to sellers of new tools, as may be imagined from the experience of one dealer who almost thought he had sold a new machine to a large company, when the buyer's attention was diverted to a second-hand proposition and the latter was accepted. The tendency illustrates the economical spirit which is abroad. Certain makers of railroad signals and like equipment, despite the fact that business has fallen off seriously with them, have improved their production facilities and are carrying full complements of workmen to keep their forces intact. They believe that all this is justified by the business which is to come with a revival of railroad demand.

The executive committee of the American Supply and Machinery Manufacturers' Association, which is to hold its annual convention at White Sulphur Springs, West Va., June 15-17, in a recent letter to President I. F. Young of the Southern Supply and Machinery Dealers' Association, expresses its regret that the latter body is not to hold its next convention at the same time and place. The letter states that the manufacturers' association will be represented officially at the Southern Supply and Machinery Dealers' Association convention at Houston by its president, D. K. Swartout, Ohio Blower Company; Secretary-Treasurer F. D. Mitchell, and other members of its official family and unofficially by as many of its members as can make it possible to attend. The American Supply and Machinery Manufacturers' Association has extended an invitation to the officers and members of the Southern Association to attend the convention at White Sulphur Springs.

The Reliance Smokeless Furnace Company, Borough of Richmond, New York City, has been incorporated with a capital stock of $200,000 and will engage in the manufacture of furnaces. J. A. Snyder, Mariners' Harbor, Staten Island; G. D. Geer, Elm Park, Staten Island, and W. J. Kennedy, New Brighton, Staten Island, are the directors.

S. E. Bell, engineer, Yonkers, N. Y., has completed plans and is letting contracts for an addition to be made to the plant of the National Sugar Refining Company of New Jersey at the foot of Main street, Yonkers. It will be of structural steel, brick and concrete construction.

The Wemlinger Steel Piling Company has had plans prepared for a manufacturing plant at Kingston, N. Y., for the production of steel piling. The building will be 50 x 120 ft., one story, of brick and steel construction and will cost with equipment about $40,000. The general offices of the company are at 11 Broadway, New York City.

Alex. Smith & Co., Yonkers, N. Y., are receiving bids for a four-story carpet factory which they will erect on Palisade avenue.

H. C. Hemingway & Co., Inc., are planning improvements to their plant at Lyons, N. Y.

The Weeper Mfg. Company, Fultonville, N. Y., has been incorporated with a capital stock of $30,000, to manufacture textiles and machinery. The incorporators are G. S. Weeper, A. Z. Wemple, Fultonville, and W. Wuerdemann, Saratoga Springs, N. Y.

The Strong Veneer Company, Gerry, N. Y., has been incorporated with a capital stock of $100,000 by E. A. Strong, of Gerry, and B. E. Strong and J. N. Chapell, of Jamestown, N. Y. It will establish a plant for the manufacture of wood veneers.

The extensive plant of the National Aluminum Works at Wellsville, N. Y., occupying an entire block, was destroyed by fire January 19, with a loss of $250,000 on buildings, machinery and stock. John E. Potter, president of the corporation, states that the company will build the plant upon the same site.

The village of Newark Valley, N. Y., is having plans prepared by Robert F. Chamberlain, engineer, of Ithaca, N. Y., for the construction of an electric light power plant to be operated by steam. The equipment will consist of 35- to 50-kw. generators, 2200-volt 60-cycle three-phase. D. A. Miller is village clerk.

Steps are being taken by I. R. Breen, mayor, and the Common Council of the city of Watertown, N. Y., for the construction of a municipal electric light plant. E. W. Sayles is the city engineer.

The Standard Mail Marking Machinery Company, Silver Creek, N. Y., has been incorporated to manufacture mail marking machines. The capital stock of the company is $40,000, and L. F. Dickinson, F. C. Ielfield, Silver Creek, and F. D. Smith, Spring Valley, N. Y., are the incorporators.

The U-File-M-Binder Mfg. Company, Syracuse, N. Y., has been incorporated to manufacture binders for correspondence, etc., capitalized at $50,000. H. M., A. M. and L. Kingsley, of Syracuse, are the incorporators.

The Afton-Windsor Light, Heat & Power Company, Afton, N. Y., has been authorized by the Public Service Commission at Albany to issue $60,000 in bonds, the proceeds to be used for construction of a hydroelectric plant at Afton.

Frick Bros., Syracuse, N. Y., will build a two-story machine shop, 40 x 132 ft., of steel and brick construction, on East Willow street.

The Ward Bros. Company, Baker, will erect a

$50,000 addition to its present plant at Murray and Texas streets, Rochester, N. Y.

The Office Toilet Supply Company, Buffalo, is preparing plans for a laundry and garage building, to be erected at Jefferson and Genesee streets, at an estimated cost of $50,000. H. C. McDonald, 102 Clinton street, is the manager.

The Board of Public Works, 1 Municipal Building, Buffalo, N. Y., is receiving bids until January 31 for an auxiliary electric traveling crane, to be installed at the pumping station at Porter avenue.

The Peerless Belting Company, Gardenville, N. Y., a suburb of Buffalo, contemplates the erection of a new building in the spring to keep pace with the growing demand for its products. The company manufactures leather, cotton and combination belting and pulley covering. I. Gingras is treasurer.

New England

BOSTON, MASS., January 27, 1914.

Manufacturers in metal lines, as well as bankers and business men generally, are expressing strong confidence that the turning point of business has been passed and that from now on times should become better, gradually improving until conditions are really good. In the machine tool trade actual results in the way of new orders have not yet been large. The change is to some degree sentimental, but the owners, their salesmen and dealers seem to believe that within a few weeks much more tangible evidence of prosperity will be felt. A few of the machine tool builders are getting orders in a volume exceeding that of the last three months. Buyers of raw material are convinced apparently that it will not be to their interest to defer the placing of such business as they have in hand. For example, a contractor who has some 1000 tons of structural steel to purchase states that he has found prices stiffening to such an extent that he does not dare to hold back any longer, though certain fabricators are still offering him certain minor inducements in the course of competition for the business.

Some significance may be given the fact that the manufacturers of wire in all its forms are experiencing a sharp reaction from the relative dullness which they have recently experienced. In some cases orders have been received totaling an excess of capacity for the time covered in their receipt. The scrap metal people are a good deal encouraged by the general tone of their market.

It should be emphasized, however, that manufacturing business is still considerably under total capacity. Probably 70 per cent. is not far from the true figure, taking business as a whole. The textile mills certainly do not average above that figure. On certain specialties some of them are running full, but on the other hand others are finding things dull. It does not seem to be a question of the tariff in a great majority of cases. Probably the average is as high as it has been in the last seven years.

The industrial building which will be erected at Central and Commercial streets, Worcester, Mass., will be one of the largest in New England for the purpose of rental. It will be of concrete, fireproof throughout, 100 x 218 ft., eight stories and basement. Burgess, Lang & Co., Boston, are carrying through the project. The building will have every facility for the carrying of materials and products, and will be equipped with a complete blower system and for electric power. Some of the space has already been rented.

The Pittsford Power Company, owned by the Rutland Railway, Light & Power Company, Rutland, Vt., has begun the construction of an additional hydro-electric plant in Chittendon, Vt., where 2000 hp. will be generated, which will be distributed at high voltage to various points, including Springfield, Vt., and Claremont, N. H., where important industries are located.

The city of Springfield, Mass., is considering the establishment of a central municipal light and power plant to serve the purposes of school buildings, the estimated cost being $20,000.

The business of the Hampden Machine Screw Company, Springfield, Mass., has been acquired by Archibald Lemieux and George M. Burnham. The industry will retain the name without change in plant or product. Mr. Lemieux will continue as the manager. The new board of officers has not been chosen. New capital has been invested to assure a substantial basis for development. The company was organized in 1908 and manufactures the various products of screw machines.

H. H. Malkasian, Providence, R. I., manufacturer of curtain rods and fixtures, has purchased a water-power privilege in Sutton, Mass., and plans to erect a factory on the premises. The building will be 50 x 150 ft.

The C. J. Root Company, Bristol, Conn., has increased its capital by the issue of $32,000 in common stock.

The Thomas G. Plant Company, Roxbury, Mass., manufacturer of shoes, will erect an additional building 60 x 250 ft., 3 stories and basement.

Announcement is made at Bridgeport, Conn., that a foundry will be built in the east end under plans by F. H. Beckwith as architect, the name of the owner being withheld. The structure will be 94 x 213 ft., of brick and steel, and an office building 40 x 70 ft.

The Kupfer Bros. Coated Paper Company, Whitinsville, Mass., is erecting an addition 60 x 160 ft., two stories, of concrete with steel and wood frame.

The Manufacturers' Building at Providence, R. I., which is one of the largest industrial buildings in New England, and is occupied by about 30 manufacturing jewelers, was damaged by fire to the amount of about $300,000 January 14, the loss being sustained chiefly by the tenants.

The New England Cable Company, Lowell, Mass., manufacturer of insulated wires, has been unable to carry through the leasing of the Belvidere plant because of complications resulting from a foreclosure on the property. The factory is to be sold at auction and the company hopes to purchase it. If the figure is unreasonable some other location will be secured and several such are under contemplation.

The Natick Steel Equipment Co., Natick, Mass., has been incorporated in Massachusetts with a capital stock of $10,000 and will manufacture steel chairs, stools, ladders and other similar equipment. George W. Trevis is the president.

The factory of the Medway Box Company, Medway, Mass., was burned January 20 with a loss of $25,000. The company manufactured wooden boxes.

The United Metal Mfg. Company, formerly at 525 West Twenty-sixth street, New York City, has been reorganized and the business removed to Norwich, Conn. H. M. Steele is president and C. F. Wells treasurer and manager.

The item in the issue of last week stating that the United States Armory at Springfield, Mass., has acquired additional land on which to erect a proposed addition is in error. No enlargement of site or plant is planned or contemplated.

Philadelphia

PHILADELPHIA, PA., January 26, 1914.

Little improvement is reported. While prospects favor a better market, current business continues spotty. Orders have been chiefly for small tools and seldom have transactions involved anything beyond single tools or small groups. New enterprises which involve the purchase of any considerable machine tool equipment are rather scarce in this district and buying has been largely for replacement or for minor extension. Railroad buying continues of an unimportant nature. General inquiries have been a shade more plentiful and the trade looks forward to better buying before long. A fair volume of business continues to develop in power plant equipment, particularly in moderate sized units. Second-hand machinery, tools and power-plant equipment have been in fair demand. Little export business is moving. The foundry trade reports irregular conditions; in instances, steel casting plants have been more actively engaged.

It is unofficially stated that the Lawrence-McFadden Company, varnish manufacturer, contemplates the erection of an extensive manufacturing plant in Tacony

and that the William Steele & Sons Company has been engaged to prepare the plans.

John W. Mortimer has taken a permit for the erection of a two-story brick workshop, 16 x 60 ft., to be built at 2721 North Rees street for James Oliver from private plans.

Reports from the city fire bureau are to the effect that the machine shops of the J. W. Paxson Company, 1048 Beach street, was damaged January 24 to the extent of $10,000. Particulars are not yet obtainable.

H. B. Underwood & Co., machinists, have purchased properties 1015-17-19 Hamilton street and 1016-18-20 Buttonwood street, immediately in the rear and adjoining their present plant, and as soon as possession can be obtained will erect on the site a 60 x 160-ft. addition. Plans for the new building are now in preparation and are expected to be ready for estimates in a few weeks.

Justice Cox, Jr., & Co., Land Title Building, are in the market for a five-ton second-hand locomotive crane suitable for handling soft coal.

Plans are being prepared by Peuchert & Wunder, engineers, for a four-story brick, slow-burning construction machine shop for the Alloway-Martin Company, to be erected at Thirty-seventh and Filbert streets. It is stated that the engineers will not be ready for bids for several months.

Williams & Richardson, Scranton, Pa., are understood to have been awarded the contract for a new electrical plant at Susquehanna, Pa., for the Susquehanna Electric Construction Company. A one-story building, 38 x 130 ft., is to be erected.

It is stated that J. O. Hunt, architect, and the N. A. K. Bugbee Company, engineers, Trenton, N. J., will be ready to receive bids in the near future for the new manufacturing building to be erected at Trenton for the A. Mecky Company, of this city. The building will be of brick and concrete, 90 x 150 ft.

It is currently stated that William R. Thropp & Son, East State street, Trenton, N. J., are awarding contracts for a two-story brick and steel factory building, 80 x 190 ft., from private plans, to be erected on New York avenue, Lawrence Township, near Trenton.

Chicago

CHICAGO, ILL., January 26, 1914.

The Art Metal Products Company, Chicago, has been incorporated with a capital stock of $20,000 to manufacture metallic boxes, cases and other articles. The organizers are Albert Dahlgren, W. R. Rocklin and Clarence Olson, 947 Leamington avenue.

The Klingelsmith Electric Truck Company, Chicago, has been organized in the office of Michael F. Cure, 69 West Washington street, by Joseph M. Klingelsmith, and incorporated with a capital stock of $350,000, to do an electrical vehicle business.

The Mahr & Byrne Company, Chicago, will be incorporated with a capital stock of $10,000 to engage in manufacturing and selling mechanical and engineering devices. The incorporators are Eugene E. Mahr, Louis J. Byrne and Lincoln E. Mahr.

The Southern Illinois Machine & Foundry Company, Murphysboro, Ill., has asked permission to increase its capital stock from $20,000 to $50,000.

The Peoria Car Works, Peoria, Ill., has filed incorporation papers providing for a capital stock of $50,000. The company will manufacture and repair cars and other railroad equipment. G. L. Dickerson is the principal stockholder.

The Illinois Valley Chemical Company, Utica, Ill., is rapidly pushing the erection of its new plant preparatory to the installation of grinding and mixing machinery.

The Forest City Overall Mfg. Company, Rockford, Ill., recently incorporated with a capital stock of $15,000, is erecting a new two-story factory building, 36 x 130 ft.

The Wistrand Mfg. Company, Galva, Ill., maker of agricultural implements and pumps, is planning the enlargement of its plant to include a new foundry and warehouse.

Work on the foundations for the Calumet plant of the Baldwin Locomotive Works has progressed well toward completion. Local machinery interests are eagerly waiting for the hoped for list of equipment to be purchased for this plant.

The Deister Machine Company, Shoaff Building, Fort Wayne, Ind., manufacturer of concentrating machinery, is erecting a building, 80 x 80 ft., one story, and advises that it will require a number of lathes, drill presses, planers, shapers, etc. The exact requirements have not yet been determined. Emil Deister is president and general manager; C. L. Alter, assistant manager, and E. G. Hoffman secretary-treasurer.

The Stearns Curtain Stretcher Company, Mishawaka, Ind., is remodeling and equipping a building for the manufacture of a patent curtain stretcher. W. B. Stearns is president.

The Leader Specialty Company, 517-521 East Walnut street, Indianapolis, Ind., has been incorporated to take over the partnership of W. M. Eastman and C. J. Mick. The company does a general jobbing and manufacturing business in plumbers' supplies. No extensions are contemplated at present.

The Independent Baking Company, Davenport, Iowa, is about to begin the construction of its $200,000 plant. The main building will be 200 x 400 ft. It is planned to use electrical power throughout.

Dubuque, Iowa, is strongly urging its advantages as a location for the new repair shops that the Chicago, Milwaukee & St. Paul Railway has decided to erect in that district. Sioux City, Iowa, is making an effort in the same direction.

Humeston, Iowa, has voted $21,000 issue of bonds for the installation of a waterworks system.

Bids will be received by the city clerk, Meade, Neb., until February 5 for the installation of a waterworks system.

Milwaukee

MILWAUKEE, WIS., January 26, 1914.

While bookings are insignificant as compared with normal, the volume of inquiries received by Milwaukee machinery manufacturers indicates that some good business will materialize within the next 30 to 60 days. The demand for skilled labor is showing a slight improvement, and the free employment office operated by the State industrial commission at Milwaukee reports that calls for machinists', patternmakers' and machinists' helpers the past week were more in number than in any one week in the last three or four months. Collections show gradual improvement all along the line. Automobile parts makers report the usual slump in new business at this season, but are busy producing on past bookings and do not anticipate any interruption between the periods of old and new requirements. On the whole, the situation grows daily more encouraging.

The department of public works, Milwaukee, will receive bids until February 6 for two 10-ton motor road rollers. F. G. Simmons is commissioner.

Negotiations by the Westinghouse Lamp Company, New York, for the purchase of the Milwaukee plant of the Kissel Motor Car Company, Hartford, Wis., are still under way and are expected to be terminated by February 1. In case the lamp company buys the plant the Kissels will build a new plant in Milwaukee, considerably larger in size than the present works at Thirtieth and Center streets.

The Saratoga Mfg. Company, Milwaukee, has been organized by Burton L. Hibbard, W. C. Lund and Otto C. Manteufel, all of Milwaukee, with $5000 capital stock to manufacture water coolers. A shop is being established in the Stroh Building.

The Chain Belt Company, Milwaukee, is constructing a conveyor and elevator system for the Philadel-

phia Public Ledger's newspaper and publishing plant. The company has also received a contract to construct a coal barge elevator system for delivery at Honolulu, H. I., which is a duplicate of the barge built for the Milwaukee-Western Fuel Company, Milwaukee, two years ago.

The Royal Ice Machine Company, Grand Rapids, Wis., is preparing to establish a permanent plant, after carrying on operations in temporary quarters for several months awaiting the development of its product. Plans have not yet been definitely settled upon.

A peremptory order has been given by the Wisconsin railway commission to the Dodgeville Electric Light Company, Dodgeville, Wis., to overhaul and repair the entire plant and distributing system and immediately employ a competent engineer to take charge of the plant. It is estimated that $7500 to $10,000 will be expended.

The West Bend Aluminum Company, West Bend, Wis., has increased its capital stock from $25,000 to $50,000 and intends to build a large brick factory addition in the spring. The company was established little more than a year ago and long since reached the limit of its capacity. The product is aluminum kitchenware and utensils.

Plans for the new manual training and domestic science building at the Stout Institute, Menomonie, Wis., to cost $200,000, will be completed February 15 by J. D. Chubb, architect, Chicago. An elaborate workshop and laboratory equipment will be required. Louis Weber, Madison, Wis., is secretary.

The Northern Paper Mills Company, Green Bay, Wis., will build a three-story addition, 80 x 160 ft., and increase its water power facilities. W. P. Wagner is general manager.

The board of normal school regents, Madison, is preparing to let contracts for the construction of the new River Falls Normal School at River Falls, Wis., to cost $130,000. It will consist of a manual training and an agricultural department, with shops and laboratories. Van Ryn & DeGelleke are the architects.

The Neshonic Light & Power Company, LaCrosse, Wis., has been ordered by the Wisconsin railway commission to furnish plans within three weeks' time for a new hydroelectric power plant to replace the present water power plant. Upon approval of the plans the commission will order work completed within six months' time.

The Green Bay Barker Company, Green Bay, Wis., manufacturer of lumber and logging tools and machines, is rushed to the limit of its capacity by reason of heavy domestic and foreign orders. The company operates a branch plant at the Canadian Soo under the name of Canadian Barker Company. Last year the company shipped 25 large barking machines to European sawmills, and supplied paper and pulp mills all over the United States and Canada with web presses, deckers, screens and grinders. It is likely that extensions will be made at both plants this year. H. E. Tidemarsh is general manager.

The Storle Engine Company, Kewaunee, Wis., which established a plant for the manufacture of internal combustion engines some time ago, has just filed articles of incorporation with $50,000 capital stock. O. O. Storle, H. O. Granberg, O. L. Pierpont and W. Heck are the incorporators. Mr. Storle is the inventor and designer of numerous types of valves and appliances which he has been manufacturing for several years on a small scale.

The Hamilton Mfg. Company, Two Rivers, Wis., wood and metal cabinets builder, will build a four-story shop building, 60 x 200 ft., as an addition to the present metal cabinet manufacturing department, established a year ago and now outgrown.

The West Bend Milling Company, West Bend, Wis., is having plans prepared for remodeling its flour mill and water power into a commercial electric light and power plant. G. W. Kuelthaw is president.

Jerry Donahue, Sheboygan, Wis., will prepare plans for the installation of a waterworks system for Chilton, Wis., to cost about $35,000.

Detroit

DETROIT, MICH., January 26, 1914.

The trend of the market is encouraging. A greater number of inquiries is reported and these for the most part are expected to result in immediate business. Sales the past week were in moderate volume, mostly of the single tool class. Second-hand machinery is in relatively good demand. The foundry situation is practically unchanged, none of the plants are operating at capacity and new bookings are light. Manufacturing machinists report business rather dull except in a few instances. No new work of importance has appeared in building circles.

Morgan & Wright, Detroit, manufacturers of rubber goods, have increased their capital stock from $2,500,000 to $5,000,000.

The Oshkosh Excelsior Company, Maple Ridge, Mich., is erecting a building, 175 x 225 ft., of concrete construction. Five excelsior-making machines will be installed at the outset.

The Kirsch Mfg. Company, Sturgis, Mich., has filed notice of an increase in capitalization from $40,000 to $150,000.

The McEwing Mfg. Company, Lansing, Mich., is preparing to remove its plant to St. Louis, Mich., where larger quarters will be secured and a small saw mill installed. The company manufactures wooden specialties.

The Detroit Battery Company, Detroit, has been incorporated by William H. Ducharme, Myron G. Pierson and George R. Beamer to manufacture batteries. The capital stock is $10,000.

Cleveland

CLEVELAND, OHIO, January 26, 1914.

Dealers report a considerable improvement in single tool orders. New inquiries pending are also mostly for single tools. Business is coming from very scattered sources. There is a fairly good inquiry for second-hand machinery but buyers are somewhat slow in placing orders. Machine tool builders are getting very little inquiry from the railroads and conditions with builders of machinery used largely by the railroads as yet show little change. Among manufacturers in metal working lines the better sentiment developed early in the year continues and this feeling is shared quite generally by the machine tool builders. In foundry lines business is still dull, but some plants are being operated at a larger capacity than in December.

The Cyclone Woven Wire Fence Company, Cleveland, Ohio, has increased its capital stock from $55,000 to $100,000 to provide for plant extensions, the company's business having grown to an extent that its present manufacturing facilities are inadequate. The plant will be enlarged, considerable new special machinery will be installed and the capacity of the galvanizing plant and power plant will be increased. It is probable that a new engine of from 65 to 100 hp. will be installed. The company reports that orders are coming in in a satisfactory volume and that it will shortly place its plant in operation nights.

The Pressure Castings Company, Cleveland, has been incorporated with a capital stock of $35,000 by John H. Watson, Jr., B. E. Robertson, David L. Johnson, L. M. Henderson and C. E. McCambridge.

The American Malleable Castings Company, Marion, Ohio, will enlarge its plant by the erection of two buildings, one 30 x 175 ft., and another 60 x 65 ft., to be occupied by its cleaning department and annealing ovens. An office building, 40 x 50 ft., will be erected.

It is announced that several prominent men of East Liverpool, Ohio, whose names have not yet been made public, are organizing a company for the erection of a six-kiln porcelain pottery, the contracts for the erection of which will be placed in February. There will be a main building, 150 x 350 ft. Power plant and machine shop equipment will be required.

The Citizens' Ice & Cold Storage Company, East Toledo, Ohio, will erect a new ice-making plant with a daily capacity of 50 tons.

The Harris Automatic Press Company, Niles, Ohio, is in the market for a gear cutter, 30-ton press and a turret lathe.

Cincinnati

CINCINNATI, OHIO, January 26, 1914.

The situation is unchanged with the possible exception of a falling off of the inquiries for machine tools in the past few days. The automobile trade is not now furnishing much business, and the railroads continue a waiting policy. From a few sources it is reported that the export business is on the mend, but the improvement noted is not general. Woodworking machinery is in better demand, with the majority of orders coming from the South, although the export business in this line is fair. Practically all the jobbing foundries are operating on short time. Manufacturers of small electrical generators and motors are enjoying a better business, and it is reported that there will be quite a number of large generating plants built in the coming spring.

The Baltimore & Ohio Railroad Company will rebuild its large coal elevator and roundhouse on Evans street, Cincinnati, which was recently badly damaged by fire. Coal carrying machinery and other equipment will be required.

It is reported that the Union Distilling Company, Cincinnati, has commissioned architects B. L. Baldwin & Co., to prepare plans for an addition to its plant, to cost $100,000. Nothing is yet known as to machinery requirements.

The Modern Packing Company, Cincinnati, has been incorporated with $25,000 capital stock to manufacture and deal in all kinds of mechanical packing materials. The incorporators are Horace S. Morand, F. O. Marshall, George W. Rhein, F. J. Souders and M. L. Smart. The company's plant is at 228 East Fifth street. George W. Rhein is president.

The proposed factory building of the Gedge-Gray Mfg. Company, Lockland, Ohio, a Cincinnati suburb, will be 60 x 168 ft., two stories and of reinforced concrete construction. Robertson & Fahnstock, Cincinnati, are the architects in charge of the plans. Mention of this project was made several months ago.

The Anti-Friction Carburetor Company, Dayton, Ohio, has plans under way for erecting a larger plant. J. W. Raymond is president of the company.

The Dayton Toy & Specialty Company, Dayton, Ohio, recently incorporated with $10,000 capital stock, will need equipment for manufacturing automatic toys and other specialties. Among the incorporators are F. F. Swadey, C. H. Langand and J. H. Ehler.

George W. Bright, Columbus, Ohio, is chairman of a committee of stockholders which plans to take over the plant of the Columbus Buggy Company, that has been in the hands of a receiver since June 7 last. It is reported that the new company will add to its manufacturing facilities in the automobile department.

Plans have been completed by Marriott, Allen & Hall, architects, Columbus, Ohio, for a manufacturing building to cost $35,000, which will be erected for the Columbus Dental Mfg. Company. Only a limited amount of special machinery equipment will be required.

The Pennsylvania Railroad Company has announced that the creosoting plant of the Ohio Wood Preserving Company, Orrville, Ohio, will be enlarged at an early date. Considerable additional machinery will be installed.

The Robbins & Myers Company, Springfield, Ohio, manufacturer of electrical equipment and specialties, has had plans prepared for an addition to its factory to be 65 x 200 ft., four stories, and of reinforced concrete construction. Until the completion of the above mentioned building the company will operate a day and night shift.

The Ritter Lumber Company, Harrison Building, Columbus, Ohio, contemplates erecting a woodworking plant to cost about $60,000. Richards, McCarty & Bulford, Columbus, are the architects in charge of the plans.

The Standard Brick Mfg. Company, Evansville, Ind., will erect an addition for the manufacture of hollow tile.

The Case Mfg. Company, Middleport, Ohio, has arranged to move its plant to Covington, Ky. The company manufactures overalls, shirts, etc., and only a small amount of extra machinery equipment will be required.

Wheeling

WHEELING, W. VA., January 26, 1914.

The factory of the Sutter Roofing & Cornice Company, Clarksburg, W. Va., was recently burned. It occupied a new two-story structure, 40 x 120 ft. It is announced that the factory will be rebuilt immediately.

The Richmond Chemical Company, Wheeling, W. Va., has been incorporated with a capital stock of $25,000 to manufacture fire fighting devices. The incorporators are Carl O. Schmidt, J. J. P. O'Brien, Z. M. Clark, and others.

The Princeton Power Company, Princeton, W. Va., has placed a large order for structural steel for the purpose of erecting a power house and machine shop. All the old buildings will be torn down and large new buildings of concrete and steel will take their place.

The Owens Glass Company, Fairmont, W. Va., contemplates the erection of a large glass factory at Fairmont, W. Va. Michael J. Owens, Toledo, Ohio, is president.

The Big Ben Oil & Gas Company, Wheeling, W. Va., has been incorporated with $100,000 capital stock by George W. Kalbitzer, Perry E. Fisher, J. T. McCrum, and others, of Wheeling, W. Va.

The Norton Electric Supply & Equipment Company, Norton, Va., has been incorporated with a capital stock of $10,000 to manufacture electric dynamos, drills, coal loaders, etc. The incorporators are W. H. Keller, George E. Roebuck, E. R. Johnson, L. M. Dunnam, and others.

The Central South

LOUISVILLE, KY., January 26, 1914.

The general situation in the machinery business in Louisville remains good, most of those handling the sales end being satisfied with the outlook. Many new manufacturing enterprises are being reported, indicating that confidence has returned and that money conditions are easier. A noticeable lack of large building jobs, which furnished support for a large part of the machinery trade last year, is in evidence, however. The demand for boilers and electrical motor equipment and in other general lines is holding up well. Numerous changes from steam to electrical power are contemplated by leading manufacturers in this territory.

The Louisville plant of the American Oak Leather Company, Twelfth and Lexington streets, is to be electrified, the company having announced that an engineering survey of the plant will be made for the purpose of determining the size of the installation that will be necessary. A 200-kw. generator and a corresponding horsepower in motors will be installed. The company will retain its present boiler equipment. B. M. Henry is manager of the local plant, general offices of the company being in Cincinnati.

The J. Schwarzwalder & Son Company, Louisville, manufacturer of beer cooperage, will build a new plant for which plans have been under way for some time. The company has had plans drawn for a large building of steel and concrete. The special machinery will be electrically operated. Arthur G. Herb is manager of the company.

The Louisville Mill Roll Corrugating Company has been incorporated with $3000 capital stock and has established a machine shop at 1002 West Main street for the manufacture of flour milling machinery. John E. Yenner is the active manager of the company.

The screen manufacturing plant of H. A. Bohn, 1008 East Broadway, Louisville, was recently burned with

$5000 loss. Mr. Bohn plans to rebuild in the immediate future, and will need some woodworking machinery.

George Dunham, formerly superintendent of the Falls City Woolen Mills, Louisville, and until January 1 in the automobile business, is organizing a woolen company to establish a mill in Louisville. The project is still in the preliminary stage. Temporary offices are in the Starks Building.

It has developed that Dr. W. H. Netherland, a banker of Louisville, is one of those interested in plans to establish a large power plant at Central City, Ky., to serve a traction system to be built in the western Kentucky coal fields. Those interested state that it is expected to spend in the neighborhood of $3,000,000.

C. A. Allen, Evansville, Ind., and others, are planning the operation of six acres of coal lands near Henderson, Ky. A tipple and other equipment will be required.

The Peter Fox & Sons Company, Hopkinsville, Ky., is planning the addition of a creamery plant which will require refrigerating and other equipment.

Bids will be received by J. H. Reid, mayor, Taylorsville, Ky., until February 7, for a waterworks system.

The Greenup Light Company, Greenup, Ky., has closed its plant and is planning to make extensive repairs.

C. A. Graham, Etowah, Tenn., is planning the purchase of a franchise for the operation of an electric light plant at Irvine, Ky. The general project has been referred to several times, but this is the first time the identity of the owner has been announced.

The Tye-Wheeler Coal Company, Barbourville, Ky., has been formed to take over the mine of the Camp Coal Company and will double the output, requiring a corresponding addition of machinery.

Wilson Bros., Middlesboro, Ky., have purchased a site for the erection of a garage, which will be equipped with machine tools for repair work.

Goodin, Brown & Co. have begun clearing the site for a quarry operation at Upton, Ky., for which power and special machinery will be needed. The main office is at Elizabethtown, Ky.

Arthur M. Morgan, Chicago, is completing plans for a new waterworks at Carlisle, Ky., and bids will be taken in the near future. A bond issue of $30,000 was authorized some time ago.

The Leitchfield Electric Light, Heat & Power Company, Leitchfield, Ky., will purchase a 100-hp. boiler, equipped with heater, pumps, etc.; a 250-kw. generator, and other power units.

The Citizens' Lighting Company, Vine Grove, Ky., has been incorporated with $3000 capital stock by W. E. Crutcher, W. D. Carter, and others.

The Columbia Lighting Company, Columbia, Ky., will purchase a 1000-volt generator in the near future. A. H. Ballard is general manager of the company.

It is reported that J. S. Lewis, Bowling Green, Ky., who recently purchased the street railway system there to end a receivership, is planning to improve and enlarge the plant.

It is reported that the Louisville & Nashville Railroad Company is planning to convert its Gallatin-Scottsville branch in southern Kentucky into an electric trolley line. It is figuring with the Scottsville Electric Light Company, Scottsville, Ky., for power, which will be needed to the extent of 180 kw. The plant of the electric light company probably will be enlarged if the plans of the railroad company are carried out.

The City Council of Central City, Ky., is considering a proposition from Eastern capitalists to build a traction line from that city to Drakesboro and Greenville, Ky., involving the establishment of a power plant in Central City.

The machinery and other property of the American Hame & Mfg. Company, New Albany, Ind., will be sold at public auction January 30 by the trustee in bankruptcy.

The Corydon Light, Water & Ice Company, Corydon, Ind., will purchase a boiler, coal and ash-handling machinery, etc., in the near future. Frank R. Wright is manager of the company's plant.

The Standard Candy Company, Nashville, Tenn., whose plant was recently destroyed, has leased a new building and is equipping it for its operations. An automatic sprinkler system will be installed.

The factory of the American French Perfume Company, Paris, Tenn., was destroyed by fire recently with $30,000 loss.

The Memphis Cereal Company, Memphis, Tenn., is planning the erection of a plant at Paris, Tenn.

J. M. Overall and C. G. Henderson, Murfreesboro, Tenn., are planning the construction and equipment of a bottling plant and ice factory.

The Hill Ice Cream Company, Chattanooga, Tenn., has decided to build a large addition for the purpose of handling milk. Concentrating plants in the milk producing district will also be established. P. E. Austin is general manager.

Noel & Co., Nashville, Tenn., have taken over the plant of the Tennessee Packing & Stock Yards Company, part of which was recently burned, and will rebuild the damaged portion. A lard compound plant, an ice factory and a cold storage plant will be provided. O. F. Noel heads the company, which has $250,000 capital stock.

The Wagon Stock & Lumber Company, Tullahoma, Tenn., has purchased the plant of the Anderson Mfg. Company and will increase its capacity. J. L. Dann is president of the former company.

H. M. Nicholas and Allen Brown, Franklin, Tenn., will establish a creamery and cheese factory. Refrigerating and power equipment will be needed.

The Anchor Saw Mills Company, Memphis, Tenn., will establish a handle manufacturing plant at New Orleans, La.

The Atlas Machine Company, Nashville, Tenn., reports heavy sales of elevators, conveyors and other equipment which it manufactures.

The Hecla Land Development Company, Ironton, Ohio, will establish brick plants and potteries. Frank Enslow and A. B. Brode, Huntington, W. Va., are among those interested.

The Madison Light & Railway Company, Madison, Ind., has asked permission of the public service commission of the state to issue $25,000 of first mortgage bonds for the purpose of enlarging the capacity of its power plant and extending electric light service to Hanover, Ind.

Plans are being drawn for a paper box factory to be erected on Third street, South Richmond, Va., to take the place of a factory outgrown. A. L. Kratz is the owner.

The National Casket Company, Pittsburgh, Pa., has let the contracts for an addition, 80 x 100 ft., of brick and concrete, to its plant at Asheville, N. C. The addition will practically double the present kiln capacity of this branch, which manufactures dimension mill supplies for the company's Northern coffin and casket factories. Frank E. Johnson is the local manager.

Birmingham

BIRMINGHAM, ALA., January 26, 1914.

Machinery dealers report a continued improvement over conditions prevailing last autumn and in December. While the volume of actual transactions has not greatly increased, the inquiry is for such a variety of goods that a generally good trade seems imminent. It is certain that confidence has been restored and the inclination to expand is growing. The demand is for engines, boilers and pumps and there is some revival of the long-stagnant machine tool business.

The Southern Railway has determined to build car shops at Acipco, a suburb of Birmingham, the present shops in Avondale, another suburb, to be moved when the former are built. The land has been secured, but no date for commencing work has been fixed.

The Smith Brothers Milling Company is building a feed mixing mill at Boyles, a suburb of Birmingham, to cost $50,000. Work on the structure is well under way.

The Alabama Marble Company, Sylacauga, Ala., is about to commence the expenditure of about $200,000 in

cutting tunnels and installing machinery in its marble quarries.

The United States Tool Company, Mobile, Ala., has been incorporated with a capital stock of $14,000, to manufacture agricultural implements and hardware specialties. Robert A. Howard, Fred W. Bacho and others are interested.

A. N. Teal and associates, Clio, Ala., propose to establish a cotton mill.

The Anniston Knitting Mills, Anniston, Ala., will erect another knitting mill.

H. P. Cork, Birmingham, will probably establish a machine shop and garage at Pell City, Ala.

The Selma Chamber of Commerce, Selma, Ala., is negotiating with a Wisconsin company to establish a branch packing house at Selma, Ala.

The Benbow Mfg. Company, Bridgeport, Ala., is reported as about to build a handle factory.

The Tennessee Coal, Iron & Railroad Company will, it is understood, build an ice factory to supply its own needs at Bessemer, Ala.

The Interstate Chemical Company, Macon, Ga., is about to build a fertilizer factory to cost $52,000.

Fred Weis, B. P. Kelly and others are associated in a company which is establishing a brick manufacturing plant at Bowling Green, Fla.

The Oakhurst Saw & Planing Mill Company, Oakhurst, Fla., has been incorporated by H. C. Fairchild, Alfred Coward and Mary Coward, of Jacksonville, Fla., with a capital stock of $10,000. A sawmill plant will be established.

The American Chemical Agricultural Company, Jacksonville, Fla., has been incorporated with a capital stock of $25,000 by Charles B. Hobbs, of Great River, N. Y.; C. Lansing Hays, Brooklyn, N. Y., and others.

St. Louis

ST. LOUIS, Mo., January 26, 1914.

The improved conditions noted in the machine tool market since the opening of the new year continue. Inquiries are increasing in number and in the extent of territory from which they come. The new business covers additions and extensions and new enterprises as well, while the number of tentative inquiries appearing show that a considerable number of enterprises are under consideration which are likely, as a result of the easier money conditions, to eventuate into industrial plants of various descriptions. Second-hand tools are in some request. Collections are reported satisfactory.

The St. Louis Beer Bottle Company, St. Louis, has been incorporated with a capital stock of $2000 for preliminary organization purposes by Ferd and Alex Gast, H. R. Williams, and others, to equip a plant for the manufacture of beer bottles, etc.

The Hamilton Mining, Milling & Timber Company, St. Louis, has been incorporated with a capital stock of $150,000 by A. B. and M. E. Hamilton, P. L. Crawford, J. H. Roach and P. R. Papin to do a general mining and lumber milling business.

The American Wine Company, St. Louis, has obtained a permit for the construction of a building adjoining its plant in which it will install equipment for a refrigerating plant when completed.

The A. H. Sullivan Mfg. Company, St. Louis, has been incorporated with a capital stock of $30,000 by A. H. Sullivan, David H. Leitch and Arthur F. Barnes to manufacture tools, machinery, etc.

The Curlee Clothing Company, St. Louis, has increased its capital stock from $425,000 to $850,000 for the purpose of extending its manufacturing business, absorbing other plants, etc.

The Chandler Pump & Supply Company, Kansas City, Mo., has been incorporated with a capital stock of $50,000 by William H. Dunshee, F. M. Hale and Thomas Arnett to manufacture pumps, etc.

The Penny Gum-Vending Machine Company, Kansas City, Mo., has been incorporated with a capital stock of $12,000 by Joseph S. Bailey, H. J. Wilkinson, and John A. Johnston to manufacture gum-vending machines.

The Gower Light, Heat & Power Company, Gower, Mo., has been incorporated with a capital stock of $10,000 by Curtis Poe, John R. Allen and S. A. Green to equip a public service plant.

An electric plant is to be equipped near the Ray County, Missouri, coal mines by P. J. Carolus, and others, of St. Joseph, Mo., for the general distribution of current.

The Thomas Utility Machine Company, Kansas City, Mo., has been incorporated with a capital stock of $50,000 by J. R. Thomas, C. C. Palmer, and others, and will operate a plant.

The J. C. Jones Lumber Company, Lees Summit, Mo., has been incorporated with a capital stock of $200,000 by J. C., W. B. and A. G. Jones to operate mills, etc.

The Triange Ice Cream Company, Altamont, Ill., has been incorporated with a capital stock of $12,500 by L. R. Warren, Arthur Faubion and A. E. Williams, and plans to equip an ice cream manufacturing plant.

The Maroa Mfg. Company, Maroa, Ill., has been incorporated with a capital stock of $25,000 by George Conover, H. R. Harpetrite and Jas. A. Worsham to engage in general manufacturing.

The Arkansas Power Company, Little Rock, Ark., having acquired plants at Malvern, Arkadelphia, Camden and Magnolia, Ark., has plans for remodeling and concentration through a central station. The company is now in the market for two 500-kw. steam turbines, switchboards, transformers and allied material. H. C. Couch is president.

A cotton gin and a flour mill are planned to be built at Little Rock, Ark., by Thomas L. Rench, Mulberry Grove, Ill.

The electric light commissioners of Prescott, Ark., have plans for the purchase of a 75-kva. generator, with automatic slide engine direct connected. A. R. Taylor is superintendent.

The Arkansas Lumber & Supply Company, Arkadelphia, Ark., has been incorporated with a capital stock of $10,000 by N. V. and H. L. Wright, and others, and will install a mill.

The Anderson Water Company, Little Rock, Ark., has been incorporated with a capital stock of $20,000 by A. G. Anderson, C. H. Ketchum and W. W. Ketchum, and is reported to have equipment plans ready.

A plant for the manufacture of boxes, baskets and furniture will be established by S. A. Scott, of Eudora, Ark., at Little Rock, Ark., in the Factoria addition.

The Arkansas Lime Company, Ruddells, Ark., is reported in the market for two 150-hp. fire tube boilers and a 200-hp. Corliss engine, as well as a 180-kw., 220-volt generator, together with 12 motors of about 10 to 40 hp.

The S. & W. Mining Company, Hot Springs, Ark., is reported in the market for a gas producer plant for the purpose of converting a 6-ft. body of lignite coal into gas for manufacturing purposes.

The Universal Fiber Gin Company, Shawnee, Okla., has been incorporated with a capital stock of $25,000 by B. D. Jones, W. S. Curtis and L. D. McKinney and will equip a cotton ginnery.

The Farmers' Co-operative Gin & Oil Company, Tishomingo, Okla., has been incorporated with a capital stock of $25,000 by H. A. Brown, J. L. Castilee and W. R. McDonald.

A flour mill and a grain elevator are to be equipped, it is stated, at Stonewall, Okla., by H. G. Foster, of that city.

The Magnolia Pipe Line Company, Oklahoma City, Okla., will build a pipe line from the Texas border to Carter County, Oklahoma, and also increase its pumping equipment. D. C. Stewart, Corsicana, Tex., is president and general manager.

The Magnolia Petroleum Company, operating in Oklahoma, but with headquarters in Corsicana, is reported to have plans for the equipment of an oil refinery at or near Oklahoma City.

The Bodock Gasoline Company, Ponca, Okla., recently incorporated with $50,000 capital stock by George L. Miller, and others, has plans for a plant to manufacture gasoline from casing head gas and is reported in the market for gas pumps as well as the plant equipment.

The Nigger Creek Oil & Gas Company, Vian, Okla., is in the market for drilling and other equipment which it will use in its operations instead of contracting. Gordon White is secretary.

The Western Lumber Rig & Tank Company, Ardmore, Okla., has been incorporated with a capital stock of $12,000 by C. E. Sykes, of Ardmore, C. P. Smith, of Tulsa, and J. J. McDonald, of Cleveland, Okla.

The Shelton Egg Carrier Company, Oklahoma City, Okla., has been incorporated with a capital stock of $50,000 by J. M. Shelton, A. E. Davenport, and others, and will equip a plant for the manufacture of patented egg carriers.

The city of Okemah, Okla., will expend about $25,000 on its waterworks plant, the bonds therefor having been authorized. C. J. Holloway is president of the board.

The plant of the Jordan Lumber Company, to be built at Kiln, Miss., to replace the one recently burned, will be equipped to have a capacity of 125,000 ft. per 10-hr. day. The Filer & Stowell Company, Milwaukee, Wis., is in charge of the engineering work. Band saws, re-saw, lath mill, electric generator, etc., are needed.

The electric light and water commissioners of Aberdeen, Miss., have plans for the installation of a 150-hp. engine.

The electric light and water commissioners of Greenwood, Miss., have plans for the early installation of a 500-kw., 3-phase, 60-cycle, 2400-volt turbo-generator with necessary allied equipment.

An electric light, waterworks and ice plant will be installed at Richton, Miss., by John MacDonald, and others, who are reported in the market for the equipment.

Considerable electric equipment is to be bought for the public service plant at Ruleville, Miss., of which O. S. Anderson is superintendent.

The Greenwood Hoop & Lumber Company, Greenwood, Miss., has been incorporated with a capital stock of $10,000 by William Swank, H. C. Meyer, and others.

The G. H. Cambre Company, Alexandria, La., is in the market for equipment for the manufacture of lubricating oils, paints and specialties. The capital stock of the company is $25,000.

The Universal Cooler Company, Shreveport, La., recently incorporated with a capital stock of $100,000 by A. J. Mercer, George M. Hearne, W. A. Freeman, and others, is reported in the market for equipment, including coolers, blowers, electric motors, etc.

L. E. Robinson, Lake Charles, La., is head of a commission for the Jefferson Parish, of Louisiana, to decide upon the equipment to be secured for the road improvement to be undertaken by the parish, including ditching machines.

The sugar mill of the Vaufrey Company, Jeannerette, La., with a capacity of 1000 tons daily, is reported burned with a loss of $300,000, largely on equipment. Replacement plans are now under consideration.

Frost Bros., Memphis, Tenn., will erect a factory, with elevators, steam plant and power equipment, to cost, exclusive of manufacturing machinery, about $60,000.

Texas

AUSTIN, TEXAS, January 24, 1914.

The machinery and tool trade has substantially improved the past week. A long period of favorable weather has been conducive to construction operations of all kinds, and there has been a general awakening in business and industrial lines. Farmers are busy preparing their land for spring planting, and early prospects are bright for an excellent crop, which is having a good effect on every line of business.

A party of Brownwood business men have purchased the plant of the Brownwood brick factory from J. D. Day and will greatly enlarge the plant, which now has a capacity of 20,000 brick daily. Hal Hardeman has been made manager of the factory.

J. D. Sug, owner of the San Angelo street railway system, is contemplating the extension of the system and the erection of a power plant.

The Stamford Brokerage Company will erect a plant at Stamford to manufacture underground reinforced concrete silos. Work will be started at once.

The City Commissioners of Waco have awarded the contract for a new artesian well costing $8960 to J. G. Hamil. Additional machinery will also be installed.

The Louis Warner Stove Company has been organized at Shreveport, La., with a capital stock of $500,000. Louis Warner is president and treasurer; B. A. Kobler, vice-president, and R. Latzke, secretary.

The Texas Climatic Tire Mfg. Association has been organized at San Antonio with a capital stock of $150,000 to erect a plant to manufacture automobile tires which will be especially adapted to climatic conditions in Texas. Options have been obtained on a factory site south of the city, and it is planned to erect a large brick and concrete building. J. A. Graham is president of the association; Francis T. Parks, secretary; Edward H. Wicks, treasurer, and Eliot W. Knight, general superintendent.

The Jourdanton Brick & Tile Company has been organized at Jourdanton with a capital stock of $10,000 to manufacture brick and tile. The incorporators are E. Danal, W. H. Hill and H. G. Burkhalter.

The Kirbyville Ice Company is erecting a 10-ton ice factory at Kirbyville. J. F. Jolley is president of the company.

E. Nichols, manager of the Bishop Ice & Cotton Company, is purchasing machinery for two new cotton gins to be erected near Bishop.

The Arctic Refrigerating Company has been organized at Silver City, N. M., with a capital stock of $1,000,000 to engage in the refrigerating business. A large plant will be erected there, it is stated. The incorporators are George E. Coxe, H. O. Young and F. W. Heckham, all of Santa Rita, N. M.

The city of El Paso will spend $20,000 in installing additional machinery at its mesa pumping plant to increase the city's water supply. Bids will be opened February 12.

It is reported that the International Bricklayers', Masons' and Plasterers' Union of America will soon close negotiations for the purchase of the plants of either the El Paso Brick Company or the Bush Brick Company at El Paso, for which Joseph P. Duffy, of San Francisco, third vice-president of the union, holds options. The plant purchased will be enlarged and operated by the union. It is said that the union has a fund of $800,000 with which it intends to establish four brick plants in various large cities through the country.

The Galveston, Harrisburg & San Antonio Railroad is drilling a well at Victoria and will erect its own water plant.

The town of Henderson is installing a new system of water works, costing $30,000.

It is reported that the Timpson & Henderson Railroad is considering locating its shops and general offices at Henderson.

The site for the new waterworks power house of the city of Longview has been purchased on the Sabine River, and work will soon be started on the plant.

The Double U Company, Post City, Texas, is taking prices on a box making machine. H. C. Hawk is secretary.

It is reported that the Turnerized Roofing Company, New Orleans, La., of which P. W. Turner is president, will erect a large factory at Myndus, N. M.

Antonio Villa Ahuji and Faustino E. Moranda have applied to the Mexican federal government for a concession for the use of the waters of the Rio Blanco and the Los Xuchites waterfall, in the state of Vera Cruz, Mexico, to develop electrical energy.

The Lone Star Tool Company, Wichita Falls, recently incorporated, has taken over the business of the Ramona Machine Company and has installed some new equipment. The company manufactures oil and gas tools and does repair work. J. B. Hinkle is president; C. E. Menzie, secretary and treasurer, and R. A. Painter, vice-president and general manager.

The Low Construction Company, Austin, has been incorporated with a capital stock of $36,000 to erect and repair buildings. The incorporators are Theodore Low, Otto Stolle and Chester Thrasher.

The Pacific Northwest

SEATTLE, WASH., January 20, 1914.

The lumber mills throughout this section of the country are resuming operations and a slight increase in the machinery trade is noticeable. Orders for new mining machinery to be used in Alaska, are coming in slowly. A brisk season of buying is expected from this quarter in the immediate future. Collections are poor.

The McAteer Shipbuilding Company, Seattle, has been incorporated by John McAteer and Dean and Lloyd Johnson. The new company has a capital stock of $100,000, and will at once begin the construction of a shipbuilding plant on the new cut of the Duwamish River. The plant will cost about $50,000.

A modern glass plant will be erected in Renton, Wash., by the Oregon Glass Company, of Portland, Ore., which will reopen the old glass plant formerly in operation here. The company will install pneumatic blowers and the latest improved machinery, and it is stated that construction will begin February 1. The company announces that for some time bottles will be the chief product.

The City Council, of Bremerton, Wash., has authorized promoters represented by Gustavus F. Rust, of Colby, to build a power plant on the Hamma Hamma River, near Elder, in Mason County. The company will bring power to Bremerton, and build a street railway system in that city.

The Shull Day Garment Company, Tacoma, Wash., will make improvements to its factory which will greatly increase its capacity.

The Pacific Iron & Steel Company, Tacoma, Wash., will immediately commence the construction of an electric smelter, to cost $50,000. A 50-year lease has been signed with the city of Tacoma for a large tract of tideland on the middle waterway, and the company plans the erection of five furnaces, the first unit to be in operation by April 1, and the others to follow immediately. The company will manufacture pig iron and steel. George Lewis Casey, of Seattle, is president of the company, and E. L. Nixon, of Seattle, treasurer.

The Gray Trading Company, Gray, Wash., is having plans prepared for adding equipment to its store and feed mill.

The office of the District Government Engineer, Portland, Ore., is preparing plans and specifications for two new 30-in. suction pumps to be installed on the dredge Chinook, recently mentioned. The Morris Machine Works, Baldwinsville, N. Y., has been awarded contract for the engines to operate the pumps, at a price of $9300 each.

The Storey Mfg. Company, 1565 Macadam street, Portland, Ore., has a permit for the erection of a two-story factory building, which will cost approximately $5000.

A special election will be held in Amity, Ore., on February 2, at which time the question of a $20,000 bond issue will be put up to the voters, the proceeds to be used in construction of a modern waterworks system. Plans have been prepared by Louis C. Kelsey, engineer, Portland, Ore.

The Junction City Grange, Junction City, Ore., has decided to build a co-operative cannery at Junction City, to cost about $5000.

The Oregon Power Company, Eugene, Ore., plans the construction of a $12,000 fuel storage house and conveyor system, to be installed between the Booth-Kelly sawmill and power plant. Bids for the work will be asked for in the near future.

T. M. Marek, Colfax, Wash., has purchased the Palace Meat Market in Nampa, Idaho, and will at once install a large packing and cold storage plant in connection.

L. R. McKenzie, a local business man, is heading a company for the establishment of a creamery at Judith Gap, Mont.

The Malta Creamery Company, Malta, Montana, is having plans prepared for the construction of an ice plant in connection with the creamery.

The Libby Lumber Company, Libby, Mont., will remodel and enlarge its saw mill this winter. The capacity will be increased to permit of a maximum of 75,000,000 ft. per year. Considerable new machinery will be installed.

Bids will be received until February 2 by E. A. Westover, town clerk, Columbus, Mont., for the construction of waterworks.

The holdings of the Cache Creek Mining Company, of Cordova, Alaska, have been taken over by James Murphy and others. The new interests expect to develop the properties on a large scale. Considerable machinery will be installed, including a large dredge.

A recent fire in Fairbanks, Alaska, destroyed the boiler house of H. Hilty, and also of Woods & Pipe, near that city. Both plants were insured and will be rebuilt at once. Considerable machinery was destroyed.

Eastern Canada

TORONTO, ONT., January 24, 1914.

The Willys-Overland of Canada, Ltd., has been incorporated with a capital stock of $500,000 and will begin active operations to manufacture automobiles at Hamilton, Ont. The Schacht property has been purchased and almost immediately necessary building extensions and changes will be made to accommodate the requirements of the new company. The Willys-Overland of Canada is an organization distinctly separate from any other company, although the president will be J. N. Willys, who is also president and general manager of the Willys-Overland Co., Toledo, Ohio, and the lines to be manufactured will be identical with those of the Toledo company. The directorate and staff of the new Canadian company will be announced shortly.

A meeting of the bondholders of the Canada Machinery Corporation, Ltd., has been called for February 11 in regard to the rearrangement of the company's funded debt. The company was organized in July, 1910, and constituted a large part of the Canadian companies manufacturing lighter grades of woodworking machinery and tools and of iron working tools. The capital stock of the company is $1,177,500 and the outstanding bonds $595,500.

The new knitting mill being built at Orangeville, Ont., by John M. Dods, of Alton, Ont., is nearing completion and it is reported will be ready for the machinery in another month.

The Olympic Mfg. Company, 64 Colborne street, Toronto, has been formed to manufacture sweater coats, etc.

The Empire Cotton Mills, Ltd., Welland, Ont., will erect a new duck mill next spring.

The Sovereign Mitt, Glove & Robe Company, Delhi, Ont., is erecting a new factory, 33 x 100 ft., to replace the one destroyed by fire.

The Handle Company, Strathroy, Ont., manufacturer of woodenware, will rebuild on a larger scale the plant which was recently destroyed by fire.

Fire destroyed the plants of the Hewitson Shoe Mfg. Company, Toronto, Ont., with a loss of $10,000, covered by insurance. The Hewitson company is moving its plant to Brampton, Ont., where it is erecting a factory.

The following companies lost their plants by fire at 88 Teraulay street, Toronto: The Automatic Electric Cooking Company, manufacturer of electric stoves, etc., loss $15,000, covered by insurance; the Pratt Food Company, loss $5000; the Canadian Seamless Wire Company and the Canadian Smelting & Refining Company, $10,000, covered by insurance.

It is announced that Hamilton, Ont., will establish a municipal artificial ice plant in the near future.

Dr. Hilliard is at the head of a local company which will establish a factory at Waterloo, Ont., for the manufacture of agricultural implements.

D. Seaman & Son, Sauble Falls, Ont., will erect a plant for the manufacture of lime, brick, etc.

The Erie Construction Company, Ltd., Toronto, has been incorporated with a capital stock of $40,000 by John S. Duggan, W. R. Anderson, and others, of Toronto, to build steam and electric railroads, etc.

The Halifax Power Company, Halifax, N. S., has obtained a charter and will erect a plant to generate

power at Indian River, about 21 miles from Halifax. Henry Holgate is representing the corporation as consulting engineer. Considerable preliminary work has been done, and it is understood that the equipment will be ordered in a short time in order to be ready for installation in the spring. S. M. Brookfield is president of the company.

The Riordon Pulp & Paper Company has renewed an option taken last summer on a large acreage at the southern limits of Haileybury, Ont. The company could not arrange for the construction of the pulp mill proposed within the time of the option, and a 12-month renewal has been effected. It is announced that the mill will be constructed in the spring.

The capital stock of Barber-Ellis, Ltd., which has works in Brantford, Ont., and warehouses in Toronto, Winnipeg and Vancouver, and is the largest envelope manufacturer in the Dominion, has recently been increased from $125,000 to $500,000.

The Quebec Government has sold its channel rights on the Jacques Cartier River, to the Donnacona Paper Company for $1000 on condition that the company spend $100,000 within four years for improving hydraulic power. The mill of the Donnacona Paper Company will be in operation February 1.

P. T. Rowland, of the Lake Superior Drydock Company, Sault Ste. Marie, Ont., announced that the company will commence in the spring the erection of its new drydock, which is to cost over $1,500,000.

The Fraser-Brook Lumber Company, Ltd., Fraserville, Que., has been incorporated with a capital stock of $99,000 by Jules Langlais, Joseph E. Pineau and others to manufacture wood pulp and to construct and operate saw mills, etc.

The Modern Foundry & Soil Pipe Company, Ltd., Cap de la Magdeleine, Que., has been incorporated with a capital stock of $250,000 by Louis A. Payette, Joseph Galipeau and others to carry on the business of general foundrymen and to manufacture pipes of all kinds.

The Canadian Hotpoint Electric Heating Company, Ltd., Toronto, has been incorporated with a capital stock of $100,000 by Earl H. Richardson, Percy H. Booth and others to manufacture electrically heated appliances and supplies, etc.

The Albion Motor Car Company of Canada, Ltd., Montreal, has been incorporated with a capital stock of $75,000 by Alexander H. Duff, Walter A. Merrill and others, to manufacture motor vehicles, etc.

The Ontario Transportation & Pulp Company, Ltd., Thorold, Ont., has been incorporated with a capital stock of $10,000 by Robert R. McCormick, of Chicago; Warren Curtis and others, of Thorold, Ont., to build and operate saw mills, etc.

The Northern Star Powder Company, Ltd., Ottawa, Ont., has been incorporated with a capital stock of $1,000,000 by Frank K. Brewster, New York, N. Y.; Paul Butler, Lowell, Mass.; Gordon Grant, Ottawa, Ont., and others to manufacture explosives, etc.

The National Silica Sands, Ltd., Montreal, has been incorporated with a capital stock of $150,000 by Edgar R. Parkins, Alexander C. Calder and others to manufacture brick, terra cotta, tile, etc.

The Arthur Flour Mills, Ltd., Arthur, Ont., has been incorporated with a capital stock of $40,000 by William S. Thomas, William J. Mitchell and others, of Toronto, to manufacture flour, etc.

Woodworkers, Ltd., Toronto, has been incorporated with a capital stock of $40,000 by Louis F. Strickland, Alexander B. Beverly and others to manufacture lumber and woodenware.

The Building Products, Ltd., Toronto, has been incorporated with a capital stock of $200,000 by William Douglas, Robert J. Gibson and others to manufacture building products.

The Taylor Portable Steel Derrick, Ltd., Toronto, has been incorporated with a capital stock of $40,000 by George M. Kelley, John D. Falconbridge and others to manufacture derricks, tools, machinery, etc.

Charles L. Sanford, of the Sanford Barrel & Keg Making Company, has announced that a factory with a capacity of 5000 bbls. a day will be erected in the Maritime Provinces, and that St. John, N. B., would no doubt be selected for the site. The company plans to establish a chain of factories throughout Canada.

Western Canada

WINNIPEG, MAN., January 23, 1914.

Some houses report the volume of trade gradually increasing, but others state there is no noticeable improvement. Prospects, however, are considered favorable. It is expected that western Canada will get some benefit without delay from the better money situation in London, where the bank rate has been reduced twice in the last few weeks.

The Central Pulp & Paper Company, Ltd., Winnipeg, Man., has been incorporated with a capital stock of $200,000 by John S. Hughes, Roger P. Fournier, and others.

The Oribo Mfg. Company, Ltd., Winnipeg, Man., has been incorporated with a capital stock of $50,000 by John Brockest, Harry S. Price, and others, to manufacture sheet metal, etc.

The Superior Wholesale Lumber Company, Ltd., Winnipeg, Man., has been incorporated with a capital stock of $100,000 by William P. Alsip, Arthur A. Alsip, and others, of Winnipeg. It will carry on a sawmill and lumber business.

Sir Donald Mann has announced that Port Mann, B. C., will be the site of the Canadian Northern Railroad shops and distributing yards.

W. H. Greenwood, president of the Skeena River Fisheries, Ltd., has announced that the company's plant at Haysport, B. C., will be enlarged so as to store 1,500,000 lb. of frozen fish. The work will be commenced by March 1.

The Zink Shoe Company, Ltd., Winnipeg, Man., has been incorporated with a capital stock of $60,000 by Peter McKinnon, Alfred B. Knowlton, and others, of Brandon, Man., to manufacture boots, shoes, and other leather goods.

R. S. Kelsh has announced that the Kaministiquia Power Company, Fort William, Ont., will shortly increase the capacity of its plant. The extensions will include a 14,000-hp. turbine generator. The cost of the improvements will be over $500,000.

Mr. Conly, of the Conly Frog & Switch Company, announces that the company will commence the construction of its new plant at Port Arthur, Ont., in the spring.

Government Purchases

WASHINGTON, D. C., January 22, 1914.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until February 10, schedule 6294, for a duplex horizontal pump for Denmark, N. J.; schedule 6295, for an oxygen compressor and spare parts for Brooklyn. Until February 17, schedule 6314, for six 6-in. handy billy ship pumps for Brooklyn.

Bids will be received at the office of the Quartermaster, Fort Du Pont, Del., until February 15, for furnishing and installing an air compressor in the pumping station.

Bids were received at the Bureau of Supplies and Accounts, Navy Department, Washington, on January 20, for furnishing supplies for the Navy Yards as follows:

Schedule 6223—Steam Engineering.

Class 183, Portsmouth—One turbo-driven generator and one lot spare parts—General Electric Company, $3790; Terry Steam Turbine Company, $2847.

Schedule 6221—Construction and Repairs.

Class 174, Brooklyn—Eleven 4-ton spur gear chain hoists—Asbury Graphite Mills, $35.67; Augustus Bleecker & Son, $42.84; Frevert Machinery Company, $38 and $40; George S. Fowler, $36.89; Ford Chain Block & Mfg. Company, $37.80; C. H. Graff, $40.79; R. W. Geldart, $35.30; Kalt Lumber Company, $35; Knickerbocker Supply Company, $37.80; Kemp Machinery Company, $42.60; Manhattan Supply Company, $35.84; Montgomery & Co., $38; Manufacturers' Agency & Sales Company, $39.24; New Jersey Foundry & Machine Company, $44.50; H. A. Rogers Company, $39; William E. Williams, $43.60; Wonham, Sanger & Bates, $48; Yale & Towne Mfg. Company, $56; James D. Rawles Company, $37.41.

Trade Publications

Motor Starters.—Allen-Bradley Company, Milwaukee, Wis. Folder. Relates to the type H resistance current switch which is designed for controlling alternating-current motors of from 1 to 50 hp. This starter operates on the resistance principle, by which the voltage at the motor terminals is varied as the speed increases from a low one at starting to the full potential when full speed is attained. The resistance units used with the starter consist of a column of prepared graphite disks, and the resistance is varied by varying the pressure on the column. Overload and no-voltage releases are provided, so that the motor is protected at all times.

Chain Drives.—Morse Chain Company, Ithaca, N. Y. Publication No. 12. Concerned mostly with illustrated descriptions of several installations of the Morse chain drives, where they have been in operation for several years. Mention is made of several drives in operation at the Pittsburgh & Lake Erie Railroad car shops which are in good condition after 10 years. A drawing showing the joint action of the chain is given, accompanied by an explanation of its design and operation. A short list of large users of the drive is included.

Dry Kilns.—B. F. Sturtevant Company, Hyde Park, Boston, Mass. Catalogue No. 220. Size, 6½ x 9 in.; 44 pages. Treats of moist air dry kilns for treating lumber and wood products. They consist of a fan, an air heater with steam coils arranged in sections incased in a steel plate jacket so that the fan blows air through it and can be regulated to secure any desired temperature, a condenser, a steam spray nozzle for supplying any additional moisture that may be necessary and a dry kiln with one or more compartments provided with supply and return air ducts and openings. For some uses the condenser is omitted. An automatic return water apparatus, steam trap, lumber trucks, a recording thermometer and a hygrometric chart are illustrated. Extracts from a Government bulletin are given with much general information about the principles of kiln drying. A table with the weights of kiln-dried wood of different kinds is included.

Storage Bins.—Arthur G. McKee, Cleveland, Ohio. Booklet. Size, 6½ x 9¾ in.; 26 pages. Contains an illustrated description of the Baker suspension type of bin for storage of coal, iron, sand, etc. It is so designed that material having different angles of repose and differing in unit weight, size, etc., may be successfully handled by varying the details of construction. The suspension principle is utilized in the support of the containing structure and the hopper principle in the design of the bin bottom. By the combination it is claimed that the slope of the side and bottom is maintained at a greater angle than the angle of the contained material, thus insuring a free flowing bin. The construction is said to be low in first cost, in up-keep and depreciation. Cross-sections of various styles of the bin are given and described. Installations for the Detroit Iron & Steel Company, the Marting Iron & Steel Company, the Ironton Iron Company and the Clinton Iron & Steel Company are illustrated. An illustrated description of the first of these appeared in *The Iron Age*, October 23, 1913.

Calendar.—Brown Instrument Company, Philadelphia, Pa. Size, 10 x 13 in. A photograph illustrates a 12-in. gun in action at Fort Wadsworth, New York Harbor, with the statement that the company's pyrometers are used on the furnaces at the Washington Navy Yard for annealing these guns.

Hot Water Heaters and Meters.—Harrison Safety Boiler Works, North Philadelphia, Philadelphia, Pa. Engineering leaflet No. 16. Size, 6¼ x 9¼ in.; 48 pages. Illustrates and describes the Cochrane hot water heaters and combined open feed water heaters and hot water meters. A V-notch weir, the head of which is measured and recorded by a special form of instrument producing a rectangular chart, is used. The flow at any instant or the total flow for a given period can be taken from this chart. Where the meter is combined with the open feed water heater, the settling chamber or water storage space of the heater serves as a still water or approach chamber for the weir, thus saving in the space occupied, the first cost, as well as in complication of piping, etc., as compared with an independent meter. The illustrations show among other installations, a combination of a metering hot well and two metering heaters of a total capacity of 1,200,000 lb. of water per hr. supplied to the New York Edison Company. The booklet includes tables, directions and forms for keeping accounts of steam boiler economy. It is pointed out that by this means it is possible to determine the most efficient grade of fuel for particular conditions and the best operating and maintenance methods. It is claimed that from the standpoint of economy the hot-water meter is at least equally as important in steam practice as the wattmeter is in electrical work.

Slate Marking Machines.—Noble & Westbrook Mfg. Company, Hartford, Conn. Catalogue. Refers to the use of machinery for placing impressions of trade marks, patent dates, graduated scales and a variety of similar work on flat or round metal surfaces. Several of the different types of machines employed are illustrated and described, and there are a number of reproductions of marks made by machines built by this company. A partial list of users of these machines arranged by industries is also included.

Pulverized Coal.—Knox Pressed & Welded Steel Company, Pittsburgh, Pa. Three bulletins. All are devoted to the subject of pulverized coal and its uses, the first, No. 10, taking up the question of the manufacture and use of this fuel, while bulletins Nos. 11 and 12 point out the advantages of using pulverized coal in a malleable-iron foundry and under steam boilers. The malleable iron foundry described is the new one of the Erie Malleable Iron Company, and there are a number of views of portions of the shop in which this fuel is used. In bulletin No. 12 the results of a test made on a boiler, at which an efficiency of 72.05 per cent. was secured are given.

Tool Steel.—Hammond Steel & Forging Company, Syracuse, N. Y. Pamphlet Calls attention to a non-shrinkable oil hardening tool steel, to which the name Status has been given. It is adapted for all kinds of die work and special cutting tools, and a view is given showing a number of tools made from it. This steel is furnished in round, square and flat bars that are shaped by hammering instead of rolling, which is claimed to give long life and toughness to the steel.

Steering and Differential Gears.—Ross Gear & Tool Company, Lafayette, Ind. Catalogue No. 8. Shows a number of different types of steering and differential gears which the company manufactures. For the most part line drawings are employed, although there are a few halftone engravings and some brief text descriptions.

Internal Combustion Engines.—Charter Gas Engine Company, Sterling, Ill. Catalogues Nos. 12 and 13. The former describes and illustrates the company's type R oil engine, which is built in eight sizes, ranging from 20 to 80 hp. The other catalogue illustrates the company's standard line of gas and gasoline engines which are built in sizes up to 20 hp. Both the oil and the gasoline engines operate on the four-stroke cycle and the construction of each type is gone into at some length, the text being supplemented by numerous halftone and line engravings. In connection with the gas and gasoline engines, a number of engravings are given showing the various combination of engines and machines that can be supplied.

Insulating Brick.—Armstrong Cork Company, Pittsburgh, Pa. Pamphlet. Deals with an insulating brick for boiler settings, furnaces, breechings, stacks, kilns, bake ovens, stills, etc., which is composed of infusorial earth, a small amount of clay and finely ground cork. The special advantages claimed for the brick are insulating efficiency, resistance to high temperatures, structural strength, moisture resisting power and moderate cost, all of which are touched upon at some length. A number of views of installations of the brick are given, together with a number of line drawings, showing the way in which the bricks are employed.

Valves.—Schade Valve Mfg. Company, 2528 North American street, Philadelphia, Pa. Catalogue No. 3-A. Pertains to a line of valves including balanced float, control and lever valves; pump controlling and regulating valves, steam and water pressure reducing valves and altitude controlling valves. All of these are illustrated and briefly described with tables of the sizes in which they can be supplied. A shipment of 19 float and control valves for use in four water softening plants is illustrated, all of the valves being furnished with special levers to suit particular local conditions.

Conveyor Scales.—Electric Weighing Company, 180 Thirteenth avenue, New York Cioty. Pamphlet. Illustrations and descriptive matter, explain the operatioon of a line of scales for belt and pan conveyors and duplex scales for pivoted bucket carriers. They are self-registering for weighing materials while in motion on conveyors, a part of the conveyor being suspended from scale beams, so that a register controlled by the beams and operated by a small generator, gives the net weight. The special features of the scale are a type of suspension for weighing the loaded and unloaded parts of the conveyor separately, a positive and rapid balancing and a small number of parts.

Reinforced Concrete Mill Construction.—Wilson System Company, Inc., 100 Broadway, New York City. Booklet. Deals with a patented system of reinforced concrete mill construction, which consists essentially of utilizing the economy of a skeleton frame construction for the walls and providing plank floors supported by reinforced concrete T beams and girders. Two sectional drawings through a beam and a girder respectively are given to show the features of the system, and there are a number of engravings of industrial buildings that have been constructed in this way.

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